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Emerging Perspectives on Resilience in Adulthood and Later Life

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Editors

Annual Review of Gerontology and Geriatrics

Emerging Perspectives on Resilience in Adulthood and Later Life

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Volume Editors

BERT HAYSLIP JR. AND GREGORY C. SMITH

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TONI C. ANTONUCCI, PhD

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Contents

About the Volume Editors

Bert Hayslip Jr. received his doctorate in experimental developmental psychology from the University of Akron in 1975. After teaching at Hood College in Frederick, MD for 3 years, he joined the faculty at the University of North Texas, where he is now Regents' Professor of Psychology. Dr. Hayslip is a fellow of the American Psychological Association, the Gerontological Society of America, and the Association for Gerontology in Higher Education, and has held research grants from the National Institute on Aging, the National Institute of Nursing Research, the Hilgenfeld Foundation, and the National Endowment for the Humanities. He is currently the associate editor of *Experimental Aging Research*, the editor of *The International Journal of Aging and Human Development*, and is the associate editor of *Developmental Psychology*. His published research deals with cognitive processes in aging, interventions to enhance cognitive functioning in later life, personality–ability interrelationships in aged persons, grandparents who raise their grandchildren, grief and bereavement, hospice care, death anxiety, and mental health and aging. He is coauthor of *Hospice Care* (Sage, 1992), *Psychology and Aging: An Annotated Bibliography* (Greenwood, 1995), *Grandparents Raising Grandchildren: Theoretical, Empirical, and Clinical Perspectives* (Springer Publishing, 2000), *Working With Custodial Grandparents* (Springer Publishing, 2003), *Cultural Changes in Attitudes Toward Death, Dying, and Bereavement* (Springer Publishing, 2005), *Diversity Among Custodial Grandparents* (Springer Publishing, 2006), and *Parenting the Custodial Grandchild* (Springer Publishing, 2008), and *Adult Development and Aging* (Krieger, 2011).

Gregory C. Smith is a professor of Human Development & Family Studies and director of the Human Development Center at Kent State University. He is the author of more than 60 publications and has edited four books. He has received more than 4 million dollars of extramural research funding from the National Institutes of Health (NIH), including a current R01 project titled "Comparing Interventions to Improve the Well-Being of Custodial Grandfamilies" funded by the National Institute of Nursing Research. Dr. Smith has also served as a member of numerous scientific review panels for NIH, the Alzheimer's Association,

and the National Institute on Disability and Rehabilitation Research. He is scheduled to become the editor of the *International Journal of Aging and Human Development* in January 2012, and is currently an editorial consultant for the journal *Developmental Psychology*. Dr. Smith is a Fellow of both the American Psychological Association (Division 20—Adult Development and Aging) and the Gerontological Society of America. In 2006, he was named Outstanding Researcher of the Year by the Ohio Association of Gerontology and Education.

Contributors

Jennifer P. Agans, **BA,** Tufts University, Medford, MA

Carol Aldwin, PhD, Oregon State University, Corvallis, OR

Miriam R. Arbeit, BA, Tufts University, Medford, MA

Jay Behel, PhD, Rush University Medical Center, Chicago, IL

Jeanette M. Bennett, PhD, Institute for Behavioral Medicine Research, College of Medicine, The Ohio State University, Columbus, OH

George Bonanno, PhD, Columbia University, New York, NY

Paul A. Chase, **MAT,** Tufts University, Medford, MA

Helena Chui, PhD, University of Illinois, Urbana-Champaign, Champaign, IL

David W. Coon, PhD, Arizona State University, Phoenix, AZ

Nicole T. Dawson, **MS,** University of Akron, Akron, OH

Heather M. Derry, PhD, Institute for Behavioral Medicine Research, College of Medicine, Department of Psychology, The Ohio State University, Columbus, OH

Manfred Diehl, PhD, Colorado State University, Fort Collins, CO

Erin E. Emery, PhD, Rush University Medical Center, Chicago, IL

Christopher P. Fagundes, PhD, Institute for Behavioral Medicine Research, College of Medicine, The Ohio State University, Columbus, OH

Kenneth F. Ferraro, PhD, Purdue University, West Lafayette, IN

Elliot M. Friedman, PhD, Institute on Aging/Department of Psychology, University of Wisconsin-Madison, Madison, WI

Brandon L. Gillie, PhD, Institute for Behavioral Medicine Research, College of Medicine Department of Psychology, The Ohio State University, Columbus, OH

Janet Kiecolt-Glaser, PhD, Institute for Behavioral Medicine Research, College of Medicine, Department of Psychiatry, The Ohio State University, Columbus, OH

Liza L. Guequierre, **PhD**, Rush University Medical Center, Chicago, IL

Elizabeth L. Hay, **PhD**, Colorado State University, Fort Collins, CO

Heidi Igarashi, **PhD**, Oregon State University, Corvallis, OR

Helen Lavretsky, **MD, MS,** University of California, Los Angeles, Los Angeles, CA

Richard M. Lerner, **PhD,** Tufts University, Medford, MA

Anthony D. Mancini, **PhD,** Pace University, New York, NY

Jennifer A. Morozink, **BS,** Institute on Aging/Department of Psychology, University of Wisconsin-Madison, Madison, WI

Janet L. Ramsey, **PhD,** Professor Emeritus of Congregational Care Leadership Luther Seminary, St. Paul, MN

Bruce Rybarczyk, **PhD,** Virginia Commonwealth University, Glen Allen, VA

Carol D. Ryff, **PhD**, University of Wisconsin, Madison Institute on Aging, Madison, WI

Kristina L. Schmid, **MA,** Tufts University, Medford, MA

Andrea Shamaskin, **MS,** Virginia Commonwealth University, Glen Allen, VA

Harvey L. Sterns, **PhD,** University of Akron, Akron, OH

Elizabeth A. L. Stine-Morrow, PhD, University of Illinois at Urbana-Champaign, Champaign, IL

Vera Tsenkova, **PhD**, Institute on Aging/Department of Psychology, University of Wisconsin-Madison, Madison, WI

Froma Walsh, **PhD,** University of Chicago, Chicago, IL

Amy E.A. Warren, **PhD,** Tufts University, Medford, MA

Michelle B. Weiner, **MA,** Tufts University, Medford, MA

Maren Westphal, **PhD,** Arcadia University, Glenside, PA

Previous Volumes in the Series

Preface

It could be said that the study of resilience is an investigation of *life course surprises*. When people face major misfortune in life, we expect that they will suffer in some way. The study of resilience, however, suggests a surprise: people fare better than expected. As Glen Elder (1999) concluded in a follow-up of *Children of the Great Depression*: "To an unexpected degree, these children of the Great Depression followed a trajectory of resilience in the middle years of life. They were doing better than expected from the perspective of their social origins" (p. 320).

The study of resilience, therefore, is often good news for gerontology and geriatrics because noxious exposures, oftentimes termed as *disadvantages*, do not always result in anticipated declines (Schafer, Shippee, & Ferraro, 2009). Rather, scholarship on resilience entails studying people who have faced harsh exposures to learn how they were able to transform the experience into something good, or at least maintain their prior functioning in the face of the negative experience. This is often described as *regaining* or *maintaining* one's level of function.

Resilience is often invoked in inquiries about coping with loss in later life. Some people seem to succumb to the negative experiences although others engage in compensatory strategies. Of course, people cannot anticipate all of the axes on which to compensate; thus, resilient people typically "select an activity by which to restore a sense of optimal functioning" (Ferraro & Shippee, 2009). We know that people with many resources are more likely to engage in this process (Lang, Rieckmann, & Baltes, 2002), but we also observe instances where resource-deprived persons manifest resilience.

In this volume, Bert Hayslip and Gregory Smith have assembled a who's who of scholars studying resilience to review the current state of the literature on the topic. In doing so, the authors also help us see the frontier of resilience research and suggest propitious avenues for further study. We get a clear picture of what resilience entails, from ecology to immunology, and the ways in which it is manifest in diverse contexts: family relations, caregiving, life transitions, disability, work, retirement, and daily stress.

The timing of this volume capitalizes on some recent developments in gerontology and related fields. For instance, the theme of the 2008 meeting of the

Gerontological Society of America was "Resilience in an Aging Society: Risks and Opportunities." Gerontologists have long been interested in the topic but scholarship on resilience is proliferating. Indeed, a recent PubMed search revealed nearly 1,400 citations to resilience. Not only gerontologists and geriatricians are interested in the subject, but resilience is being studied by scholars in many fields such as engineers (disaster resilience), clergy (spirituality), psychiatrists and psychologists (recovering from trauma, suicide prevention), and immunologists (cytokine activity), to name a few.

It is remarkable for resilience to occur at any age, but it is especially noteworthy when it occurs in later life. Older adults who can withstand the assault of adversity prompt us to ask questions such as: How did they view the negative experience? What resources did they mobilize to address the experience? What enabled them to rebound from the harsh exposure? Unlike any other book, this 32nd volume of the *Annual Review of Gerontology and Geriatrics* answers these questions and enables us to look keenly into the lives of resilient people.

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Kenneth F. Ferraro
Purdue University

ANNUAL REVIEW OF GERONTOLOGY
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PART 1

DOMAINS OF RESILIENCE IN ADULTHOOD AND LATER LIFE

These chapters reflect the fact that resilience is best understood as not only multidimensional in nature, but also in a complementary fashion, that resilience as a meaningful construct is also domain specific. In these respects, Smith and Hayslip discuss the construct of resilience: its evolution and development, the historical context in which an emphasis on resilience has surfaced, and issues related to the definition and measurement of resilience in the context of protective factors, risk, and adversity. Fagundes, Gillie, Derry, Bennett, and Kiecolt-Glaser examine the biophysiological dimensions of resilience, addressing the relationship between immunological functioning and resilience in a causal framework. Lavresky explores the literature on resilience to stress and aging and how this is related to mood disorders such as depression and anxiety, wherein psychological and biological factors contributing to resilience that are universal across all ages, as well as those that are unique to later life are reviewed, and suggestions for intervention are offered. Ryff, Friedman, Morozink, and Tsenkova discuss key personality attributes associated with resilience and health, placing special emphasis on resilience in the context of emotional expression and emotional regulation, wherein multiple dimensions of well-being are central to understanding resilience. Stine-Morrow and Chui explore resilience in the context of the necessity to maintain cognitive functioning into later life, emphasizing the development of new skills and/or cope with declines in one's skills as a special case resilience. Aldwin and Igarashi treat resilience as a key factor in enabling adults and older persons to minimize poor person-environment fit as well as seeing resilience as a key construct that enabling one to identify a development niche that is positive, wherein in this light, diabetes is discussed as a health difficulty that can be understood and treated at multiple level. Ramsey discusses the role of resilience in contributing to spirituality as a resource as well as a coping mechanism to help define successful aging, examining the cognitive, emotional, and interpersonal antecedents of resilience in later life.

CHAPTER 1

Resilience in Adulthood and Later Life

What Does it Mean and Where Are We Heading?

Gregory C. Smith and Bert Hayslip Jr.

ABSTRACT

This chapter presents an overview of resilience in later life as it relates to both intraindividual plasticity over time and to interindividual differences in developmental outcomes. It discusses the historical antecedents of the current expanding interest in this construct, challenges in its definition and measurement, the importance of understanding and designing intervention to impact resilience at multiple levels. It is argued that resilience needs to be understood in light of the interaction of personal and environmental factors, and that key aspects of resilience (protective factors, risk/adversity, outcomes) are difficult to define clearly, contributing to ambiguities in the definition of resilience in adulthood and later life. Developmental and sociocultural aspects of resilience are discussed, and these are framed in terms of not only future directions for research, but also in terms of their implications for practice and public policy.

Resilience is an alluring and deceptively simple construct that is riddled with complexities, contradictions, and ambiguities (Kaplan, 2006). It has been argued that resilience is multidimensional in nature—and reflecting a multitude of protective factors and adaptive processes (Bergeman & Wallace, 1999). This multidimensionality has, to an extent, been reflected in studies exploring the

factor structure of measures of resilience (see e.g., Resnick & Inguito, 2011; Wagnild & Collins, 2009; Windle, Markland, & Woods, 2008).

The scientific study of resilience began over three decades ago when developmental researchers began to notice positive adaptation among subgroups of children who were considered "at risk" for developing later psychopathology (Wright & Masten, 2006), wherein it is rooted in research with children exploring the relationship between exposure to risk and adversity and both positive and negative outcomes (Vanderbilt-Adriance & Shaw, 2008). Indeed, Lipsitt and Demick (2011) argue that a fuller understanding of resilience in later life can be achieved by exploring its antecedents in childhood and adolescence. To an extent, it could be argued that interest in resilience among adults and older persons has also likely been driven by the Positive Psychology movement (Seligman & Csikszentmihalyi, 2000), and is consistent with the notion of intraindividual *plasticity* (Baltes, 1997; Bergeman & Wallace, 1999). Specific examples of the application of resilience to later life are found in discussions of strength-based approaches to counseling and therapy (Areán & Huh, 2006; Ronch & Goldfield, 2003), grief and bereavement (Bonanno, Westphal, & Mancini, 2012; Moore & Stratton, 2002; Stroebe, Hansson, Schut, & Stroebe, 2008), dying (Nakashima & Canda, 2005), and the notion of cognitive reserve capacity (Stine-Morrow et al., this volume; Staudinger, Marsiske, & Baltes, 1995).

The rapidly increasing appeal of resilience within gerontology is further evidenced by three edited books on this construct published within the past 2 years (Fry & Keyes, 2010; Reich, Zautra, & Hall, 2010; Resnick, Gwyther, & Roberto, 2010), scores of recent journal articles on resilience, as well as an intense interest in constructs such as successful aging (Rowe & Kahn, 1997, 1998), spirituality (Atchley, 2009), wisdom (Brugman, 2006), and adjustment to dementia (Harris, 2008).

In this light, it is clear that the scientific study of resilience has implications for understanding adult development in general (Lerner et al., this volume) as well as for prevention and intervention efforts aimed at guiding public policy and social programs to improve outcomes for older adults at risk (Aldwin & Igarashi, this volume). An emphasis on role of resilience is further underscored by the fact that population-based studies have consistently documented that (a) over the course of most persons' life span, it is rare to observe that someone is not exposed to at least one and often several events severe enough to meet *DSM-IV* criteria for a psychological trauma, and that (b) understanding individual differences in responding to such events is a serious public health concern (Bonnano et al., this volume).

In this chapter, we describe the complexities and nuances of defining resilience in the context of adulthood and old age by examining the key factors of *risk*, *protection*, and *positive outcome* that are integral to this overarching

construct. Although many of these definitional challenges originated within the field of child psychology, our focus is on their significance to adulthood and later life. Next, we consider the unique methodological challenges faced by gerontological researchers who study resilience among older adults. We conclude by discussing directions and implications for future research, practice, and policy as it applies to resilience. Throughout the chapter, we draw upon material presented by the authors of other chapters in this volume as well as extant research pertinent to resilience to illustrate these major points.

DEFINING LATE LIFE RESILIENCE

Irrespective of chronological age, resilience has typically been defined as a pattern of positive (or the avoidance of negative) adaptation in the context of past or present adversity or risk that poses a substantial threat to good adaptation (Kaplan, 2006; Rutter, 2007; Wright & Masten, 2006). Thus, the study of resilience underscores the importance of acknowledging both intraindividual changes and the resulting interindividual differences in response to stress or adversity, with the fundamental questions being (a) "over time, what factors enable persons who are faced with adversity to bounce back after such experiences?" and (b) "why do some individuals who face identical risk or adversity show positive outcomes while others do not?" (Rutter, 2010). Although it is tempting to explain both intraindividual and interindividual differences in resilience by postulating an individual attribute or personality trait(s), there is strong consensus that resilience is a process involving the complex person–environment (PE) interactions represented in Figure 1.1 (Aldwin & Igarashi, this volume; Lerner et al., this volume; Rutter, 2010; Vanderbilt-Adriance & Shaw, 2008; Wright & Masten, 2006). Thus, internal, dispositional resources' role in understanding resilience need to be understood in concert with environmental supports and constraints impinging on the individual (see Fuller-Iglesias, Sellars, & Antonucci, 2008). In this respect, we might consider resilience as an adaptive dispositional *attribute* possessed in varying degrees by different individuals, as a dynamic *process* stressing adaptation to coping with both developmental and cultural change (see Leipold & Greve, 2009) as well as with adverse experiences per se, and as an *outcome*, *derived from* one's experience in dealing with stress and adversity, that is "what does not kill me makes me stronger" (Nietzsche, 2007). In this respect, Friedman and Martin (2011) who followed up participants in the Terman Longitudinal study over 70 years later, found evidence consistent with the fact that in many cases, *greater* exposure to stress and adversity was associated with a *longer* life (see also Mroczek, Spiro, & Griffin, 2006). Resilience may therefore act as both a mediator of exposure–outcome relationships or as a moderator of individual

BIOPSYCHOSOCIAL COMPLEXITIES OF LATE LIFE RESILENCE

Risk/Adversity

Individual Vulnerability

Risk Factors
 (Personal &
 Environmental)

Cumulative Risk

Outcomes

Developmental Growth
 & Maintenance

Psychological
 Well-Being

Avoidance of Disorder

Rebound

Recovery

Psychosocial

Physical

Protective Factors

Individual
Attributes

Interpersonal
Relationships

Environmental
Supports

TIME
Age-graded, History-graded, & Nonnormative Influences

FIGURE 1.1 Biopsychosocial complexities of late life resilience.

differences in adjustment-related outcomes (Wilks & Croom, 2008). Similar questions regarding mediation and moderation as it pertains to a related construct, *psychological hardiness* (Kobasa, 1982), have been explored by Clark and Hartman (1996), Crowley, Hayslip, and Hobdy (2003), and Wallace, Bisconti, and Bergeman (2001).

As described in the following text, the key elements of the resilience process are risk/adversity, protective factors, and positive outcomes. In turn, the complexity of resilience is evidenced by the perplexity that surrounds these three elements. As articulated by Bonnano et al. (this volume), "resilient outcomes are not the product of one or even several primary factors. Rather there are multiple risk and resilience factors that coalesce in a cumulative or additive manner, each contributing or subtracting from the overall likelihood of a resilient outcome" (p. 178).

Risk/Adversity

Risk refers to an elevated probability of an undesirable outcome in a group of people who have a particular characteristic in common. For instance, Fagundes et al. (this volume) point out that the odds of having poorer antibody responses

to vaccination, poorer control of latent herpes viruses, slower wound healing, and higher systemic inflammation are greater in adults who are family caregivers to persons with dementia than for their noncaregiving age peers. Thus, risk is a group or population term because it does not identify which particular individuals within an "at risk" group will eventually display adaptational difficulties (Wright & Masten, 2006).

Risk factors are measurable characteristics of individuals or their environment that predict negative outcome on a specific criteria (Wright & Masten, 2006). Common risk factors among older adults include negative nonnormative and age-graded events such as death of spouse, death of friends, being predisposed to an early death, declines in physical health and functioning, loss of social status and prestige, societal ageism, and financial insecurity, many of which become increasingly prevalent in later life (Staudinger et al., 1995). In contrast, *vulnerability* refers to the failure of resilience which increases the probability of distress. According to Cohler, Stott, and Musick (1995), vulnerability may be viewed as a continuum in which heritable characteristics (e.g., innate affective or emotional styles; Lavretsky, this volume), together with subsequent life experiences (e.g., community relocation in later life; Ryff, Friedman, Morozink & Tsenkova, this volume), jointly determine the extent of resilience-related resources (be they dispositional or social/interpersonal) that persons can muster at any point in time in response to risk.

Although the requirement of *risk or adversity* is explicit in most definitions of resilience, a number of questions have surfaced regarding this qualification that are of particular relevance to resilience in later life. One such issue is that several challenges exist in determining truly "high-risk" contexts and in interpreting the degree to which positive adjustment can actually occur in the context of chronic and severe risk (Vanderbilt-Adriance & Shaw, 2008). Bonnano et al. (this volume) noted that although most of the original developmental research on resilience focused on chronic adversity in children (e.g., poverty; chronic abuse), resilience in adulthood has primarily been examined within the context of more isolated, acute life events (see for example, Diehl, Hay & Chui, this volume; Lavretsky, this volume). This has occurred despite the fact that children are exposed to acute life events (e.g., natural disasters) with about the same frequency as adults, with the latter often experiencing chronic adversity as well. Furthermore, the types of adversities faced by older adults are often much different than in other age groups. These range from the likelihood of chronic illness that is experienced on a daily basis, the loss of important roles and relationships associated with retirement or widowhood to more catastrophic experiences such as having dementia or being diagnosed with a terminal illness (Allen, Hayley, Harris, Fowler, & Pruthi, 2011). Little is known, however, about

the combined impact of major, chronic, and daily stressors on psychological well-being among high-resilient individuals in later adulthood (Ong, Bergeman, & Boker, 2009). It is also noteworthy that studies of resilience in older adults have tended to lack focus on the detail of adversity, defined the adversity construct poorly, or have assumed that old age itself is necessarily adverse (*Hildon, Montgomery, Blane, Wiggins, & Netuveli, 2010*).

Regardless of chronological age, exactly how one defines risk is crucial because what determines vulnerability as opposed to resilience depends on the initial determination of risk. Although one could assume that any factor shown to affect individual outcomes adversely should be considered a risk factor, this would preclude identifying characteristics that consistently differentiate vulnerable individuals from resilient individuals because anything distinguishing good outcomes from poor outcomes would be considered a risk factor (Kaplan, 2006).

To further complicate matters, one might also envision the possibility that some individuals have the capacity for resilient outcomes even if they have yet to experience and overcome adversity. In fact, some scholars have concluded that resilience may be operationalized as both a final outcome and as a theoretical capacity for dealing with potential future adversity (Goldstein & Brooks, 2006; Szanton, & Gill, 2010). This approach is similar to the concept of reserve capacity that refers to an older adult's potential for change and growth stemming from both internal (e.g., cognitive capacity, physical health) and external (e.g., social network, financial status) resources available to the individual at any given time. Sterns and Dawson (this volume) provide examples of how the concept of developmental reserve capacity may counter potential adversities faced by older workers. Staudinger et al. (1995) have asserted that although both resilience and reserve capacity imply the presence of latent resources that can be activated, reserve capacity also encompasses factors and resources that promote growth beyond the current and normal level of functioning (see Stine-Morrow et al., this volume).

On the other hand, it is also possible that individuals may be incorrectly labeled resilient by researchers when they have not actually been exposed to the situation considered to be a risk factor or stressor (Kaplan, 2006). For example, an older adult providing care for a spouse with dementia might erroneously be labeled as resilient because he or she has not demonstrated signs of diminished immunological functioning (Fagundes et al., this volume) largely because that caregiver has not been in this role long enough to experience significant stress or strain. At times, therefore, the assumption of being exposed to risk may itself be faulty. Unfortunately, risk factors have often been inferred from aversive or unfavorable contexts (e.g., poverty, widowhood) rather than being empirically assessed (Ong et al., 2009).

How investigators define and operationalize risk is also important because, as the literature on resilience in children reveals, the prevalence of resilience is considerably higher in low-risk versus high-risk contexts. When single measures of risk are used, or samples consist of predominantly white middleclass children, rates for resilience are considerably higher than those found in studies of multiple risks or in demographically at-risk samples (e.g., ethnic minority status, low SES [socioeconomic status]) of children (Vanderbilt-Adriance & Shaw, 2008). This suggests that risk factors do not exist in isolation and that the concept of cumulative risk is of critical importance in determining the true rates of resilience across the entire life span (Hildon et al., 2010). Many researchers have even claimed that the number of risk factors is more important for the prediction of resilient outcomes than the precise nature of any risk variable (Wright & Masten, 2006). This issue seems particularly relevant to old age where many simultaneous losses and challenges of a negative valence occur in conjunction with a depletion of resources (Staudinger et al., 1995). Diehl et al. (this volume) recommend that future research is needed to examine the effects and dynamic interactions of multiple risk and resilience factors *simultaneously* rather than in isolation across adulthood. In turn, Lavretsky (this volume) believes that viewing resilience as a dynamic process of adaptation to everyday challenges of growing old may be particularly useful for explaining longevity and successful aging.

Protective Factors

*Protective factor*s have been defined as individual or environmental characteristics that predict or correlate with good outcomes in individuals. They moderate the effects of individual vulnerabilities or environmental risks so that adaptation is more positive than would be the case if the protective factor was not available (Cohler et al., 1995; Goldstein & Brooks, 2005). With respect to psychological outcomes following adversity, there is widespread consensus that three major categories of protective factors exist for both children and adults: individual attributes, quality interpersonal relationships, and environmental supports (Goldstein & Brooks, 2005; Ong et al., 2009; Vanderbilt-Adriance & Shaw, 2008). Examples of protective factors among older adults within each of these categories are amply demonstrated throughout the chapters of this volume. Individual attributes involve such diverse possibilities as personality traits (Lavretsky), use of psychological strategies (e.g., social comparison, reflected appraisals, coping styles; Ryff et al., this volume); emotional regulation (Bonnanno et al., this volume); cognitive appraisal skills and problem-solving ability (Sterns & Dawson, this volume); self-conceptualization (Diehl et al., this volume); various indices of positive well-being (e.g., mastery, purpose in life, personal growth, positive affect; Ryff et al.); education, knowledge, and healthy life style habits (Stine-Morrow and Chui, this

volume); and spirituality (Ramsey, this volume). Examples of *quality interpersonal relationships* and *environmental supports* mentioned throughout this volume include such facets as spiritual supports (Ramsey); ergonomic design (Sterns & Dawson); as well as familiarity, belongingness, social networks, and community attachment (Aldwin & Igarashi, this volume). In this respect, Bartley, Head, and Stansfield (2007) found that the attachment style formed earlier in life influenced middle-aged men's responses to educational disadvantage and associated career difficulties. Thus, attachment style may moderate one's response to adversity later in life.

Like resilience itself, the seemingly straightforward concept of protective factors is not immune from complexity and confusion. Wright and Masten (2005), for instance, note that controversy exists over labeling a continuous variable that correlates with adaptation as a risk factor or as a protective factor, when it could be viewed as either or both. For example, poverty might be viewed as a risk factor for negative outcomes in old age, whereas wealth might be viewed as protective factor associated with positive outcomes. It is also the case that many researchers maintain that protective factors can only be identified within the context of high risk making them much harder to identify than developmental assets (Vanderbilt-Adriance & Shaw, 2008). Consequently, many factors that were originally identified as protective in past research with children facing low risk are perhaps better viewed as assets that benefit child development and adaptation at all levels, regardless of risk status (Wright & Masten, 2005). These distinctions seem equally relevant to the study of resilience in adulthood and old age as discussed in detail by Lerner et al. (this volume).

Another knotty question concerns whether or not protective factors are generally beneficial across multiple outcomes or are domain specific (Kaplan, 2006). Rutter (2010) has asserted that risks and protective factors may be specific to particular outcomes. For example, we would not expect that an older adult smoker who has avoided cancer would be similarly protected against dementia. In contrast, other scholars have maintained that resilience at all periods of the life span rests primarily on the quality of interpersonal relationships available to the individual (Ong et al., 2009; Ungar, 2010). It is also likely that protective factors are sometimes intertwined and do not exert their effects independently of one another. For example, Stine-Morrow and Chui (this volume) describe how cognitive capacity and health in later life may sustain one another through reciprocal causation, such that cognitive capacity buffers the impact of stress on affect and is an important resource for continued management of health and wellness. However, as noted by Vanderbilt-Adriance and Shaw (2008), very few studies have examined the effects of cumulative protective factors. This is a critical shortcoming because an accumulation of protective factors might improve outcomes in high-risk contexts where individual protective factors are not enough.

Outcomes

Puzzlement over the concept of resilience becomes especially apparent with respect to how one defines "positive outcomes" in the face of risk or adversity. As shown in Figure 1.1, and revealed by the chapters of this volume, outcomes mentioned in the literature on resilience have ranged all the way from the optimization of human development to recovery from the negative consequences of adversity (Ong et al., 2009; Szanton & Gill, 2010). As such, resilient outcomes have been operationalized as either the absence of a negative outcome (e.g., no psychopathology or physical illness), the presence of a positive outcome (e.g., social competence), or the combination of both depending on theoretical perspective and the nature of the risk factor in question (Vanderbilt-Adriance & Shaw, 2008). For instance, some risks in adulthood may be so powerful (e.g., a traumatic war experience; genetic predisposition) that the absence of psychopathology or an illness by itself suggests resilience, whereas risk factors of lower intensity (e.g., widowhood at age 75) require greater evidence of a positive outcome.

Bonnano et al. (this volume) note that defining resilience as the lack of disorder offers only a limited approach to understanding this concept because it is tantamount to defining health as the absence of disease. They also distinguish resilience (when one experiences an extreme adversity but nonetheless still manages to maintain a relatively stable trajectory of healthy functioning and positive adaption) from recovery (when there are elevated symptoms and some functional impairment after adversity followed by a gradual return to normal levels of functioning). Bonnano et al. further suggest that most resilient persons experience at least some distress and upset following the acute stressor and are not necessarily "super-copers."

The meaning of positive outcomes within the context or resilience is further complicated by the fact that they do not necessarily generalize across time or domains of functioning (Kaplan, 2006; Vanderbilt-Adriance & Shaw, 2008). For example, an older adult who shows signs of positive outcomes in the workplace may simultaneously become depressed as a formal caregiver to a frail spouse (Sterns & Dawson, this volume). Moreover, within the same sphere of operation, judgments of resiliency can vary as outcome measures vary (Kaplan, 2006). Although an older worker may be adapting positively within the work environment if outcome measures focus solely on performance, the same worker may demonstrate impaired relationships with coworkers (Sterns & Dawson, this volume).

The issues raised in this section on positive outcomes have major implications for gerontologists. First, the prevalence of resilience among older adults is likely to be much higher when positive outcomes are assessed in a single domain versus multiple domains (Vanderbilt-Deliance & Shaw, 2008). Second, unless

multiple domains of development are assessed, only a partial picture of resilience will emerge (Kaplan, 2006). Third, research on children has shown that the likelihood of discontinuity across domains appear to increase as the level of risk increases, such that the middle class children experiencing negative life events are more likely to have positive outcomes across domains than low-income minority children (Vanderbilt-Adriance & Shaw, 2008). Thus, one might similarly expect that older adults at high levels of risk will demonstrate fewer positive outcomes in general. Finally, resilience is not an "all-or-nothing" phenomenon, and gerontologists should be cautious in discussing resilience in a general or global way (Vanderbilt-Adriance & Shaw, 2008; Rutter, 2010). As stated by Cohler et al. (1995), "we all have a checkerboard of strengths and weaknesses leading to relative degrees of resilience across particular situations" (p. 778).

Time-Related and Developmental Considerations

As depicted in Figure 1.1, the concept of resilience in adulthood and old age must be viewed within the contexts of time, social ecology, and culture in order to be understood fully. With respect to time, Ong et al. (2009) have noted from a life span developmental perspective that various aspects of resilience may be influenced by normative developmental transitions (e.g., shifting from work to retirement), nonnormative events (e.g., natural disasters; encountering a devastating personal loss), and chronic life difficulties (e.g., lifelong poverty; having a developmental disability). During old age, in particular, idiosyncratic and normative influences become increasingly negative, thereby threatening current levels of adaptation (Staudinger et al., 1995). In turn, conceptualizations of resilience in late adulthood typically distinguish resilience as *recovery* from risk and adversity from resilience as *maintenance* of developmental capacities in the face of cumulating threat and challenge (Lerner et al., this volume; Ong et al., 2009).

Rutter (2007, 2010) has asserted that a life span perspective is necessary because resilience cannot be reduced to what is involved in the chemistry of the moment of exposure. For example, longitudinal studies involving children reveal that adjustment may fluctuate over time as children pass through various milestones and their associated challenges, such that some children experiencing high levels of adversity may be doing well socially and academically at school age but later show declining adjustment while transitioning to adolescence (Vanderbilt-Adriance & Shaw, 2008).

From a developmental perspective, Cohler et al. (1995) have argued not only that persons showing resilience at one point in life may be much less resilient when confronted by later adversity, but also that the accumulation of significant adversity overtime may eventually exceed the developing individual's capacity to cope with misfortune altogether.

For instance, female survivors of child sexual abuse often display a wide range of interpersonal problems in adulthood, including problems with intimate partner relationships, disturbed sexual functioning, and difficulties in parenting (Wright & Masten, 2005). Similarly, Fagundes et al. (this volume) describe how chronic overactivation of the autonomic nervous system and HPA (Hypothalamic-Pituitary-Adrenal Axis) axis because of prolonged stress throughout life increases allostatic load and ultimately leads to poorer health later in life.

On a more positive note, however, there is also limited evidence that early intermittent exposure to stress in both humans and animals does not result in vulnerability but instead enhances arousal regulation and resilience (Lyons, Parker, & Schatzberg, 2010). In humans, this process has been referred to as inoculating, steeling, or toughening (Rutter, 2007, 2010). Along these lines, Kaplan (2006) has argued that (a) confronting stressors may promote cognitive differentiation, self-confidence, and a more mature approach to life; (b) dealing with pain and loss may produce greater understanding and empathy for others; and (c) encountering novel crisis situations may broaden one's perspective, promote new coping skills, and create new resources. In a recent longitudinal study with a national sample, Seery, Holman, and Silver (2010) found that adults with a history of some lifetime adversity reported better mental health and well-being outcomes than not only people with a high history of adversity but also than those with no prior adversity. Similarly, Rybarczyk, Emery, Guequierre, Shamaskin, and Behel (this volume) discuss how older adults' increased experience with sickness, medical regimens, and common challenges across illnesses likely buffers the effects of stress when managing further health problems. Diehl et al. (this volume) consider how individuals may experience growth from daily stress, or from being exposed to certain types of daily stressors (e.g., stressors that are experienced as positive because they challenge a person's competence and sense of self).

There are additional developmental considerations regarding resilience that are particularly relevant to later stages of the life span. For example, Ong and Bergeman (2004) have suggested that studying midlife samples may provide a unique opportunity to investigate age-related turning points in vulnerability and protective processes. Even though middle-aged adults display higher levels of negative affect, show greater affect variability, and experience greater frequency of daily stressors in comparison to older adults, the processes that foster greater emotional complexity and integration begin during the middle years. Studying these processes in middle-aged samples—they argue—may provide valuable insight into developing interventions to foster late life resilience.

Another intriguing developmental consideration is that what is ordinarily thought of as decline or loss in old age may actually be quite adaptive within the everyday circumstances of older adults (Staudinger et al., 1995).

For example, although we typically regard becoming dependent on others for personal care as a loss, one might also view this as a gain in an older adult's social contacts or the freeing up of resources to engage in desirable activities. Under certain circumstance, older adults may also rely on coping strategies that would otherwise be viewed as inappropriate or dysfunctional. Tobin (1999), for instance, has claimed that very old adults who are near death can effectively use such behaviors as a magical mastery and overt aggressiveness to maintain a sense of hopefulness and self-identity. The aforementioned examples clearly suggest that normative judgments regarding appropriate adaptation to adversity do not necessarily apply to all developmental or environmental conditions (Kaplan, 2006; Rutter, 2010).

Although the study of resilience within the biological realm has received much less attention than has psychological resilience across the life span, the study of biological resilience among the very old might hold great applied significance. For example, De Alfieri and Borgogni (2010) have asserted that a critical topic in geriatric medicine should be to clarify which older adults in critical condition should have therapy. They claim that because the decision-making process regarding what should be done for patients aged 80 and older (e.g., in an emergency, in rationalizing invasive treatments, in providing better-quality end-of-life care) is not well established, it is necessary to personalize medical treatment by adapting interventions to the real capacity of the patients to respond in a cost-effective manner. If researchers are able to uncover how some protective factors (genetic, demographic, environmental, sex-linked, social, humoral, psychological, functional) contribute to positive outcomes among very old patients, then this information might be used by geriatricians to predict resilience and to identify who is likely to have a satisfactory response to treatment, regardless of age (De Alfieri & Borgogni, 2010). Thus, the study of biological resilience in the later years is an important direction for future research.

Sociocultural Considerations

As stated earlier, there is strong consensus that resilience is a process that encompasses complex PE interactions (Aldwin & Igarashi, this volume; Lerner et al., this volume; Rutter, 2010; Vanderbilt-Adriance & Shaw, 2008; Wright & Masten, 2005). This further adds to the perplexity of resilience, as revealed by Kaplan's (2006) observation that "the literature finds the concept applied to a bewildering array of categories of individuals and systems" (p. 40). In the developmental literature, for example, good outcomes have often been defined in terms of the children's observed or reported competence in meeting the expectations for children of a given age and gender as defined in their particular sociocultural and historical contexts (Wright & Masten, 2005). In turn, an

ecological and transactional systems approach to understanding resilience has led to a dramatic shift from the traditional focus on the individual to a broader focus encompassing family, community, and cultural influences (Aldwin & Igarashi, this volume; Goldstein & Brooks, 2005; Cohler et al., 1995; Wright & Masten, 2005). Recently, Cacioppo, Reis, and Zautra (2011) claimed that identifying the features of individuals, relationships, and group structures and norms that promote social resilience and determining effective interventions to build social resilience are among the most important challenges facing contemporary behavioral science.

Aldwin and Igarashi (this volume) describe how contextual and community resources provide support for resilience in later life by providing the opportunity to use key resources. On the assumption that "resilience rests, fundamentally, on relationships," they maintain that (a) strong, supportive relationships are critical for achieving and sustaining resilient adaptation, and (b) a sense of community is critical to resilient aging. They additionally note that the built environment (e.g., housing, transportation, and home modification) and social environment (e.g., inclusion, respect, participation) are contingent on each other and mutually reinforcing. From a public policy perspective, Aldwin and Igarashi further discuss how promoting the resilience of elders may also promote the overall health of communities, a topic that will become increasingly critical as the population ages.

Ramsey (this volume) describes how spiritually based communities may be especially beneficial to fostering resilience among older adults. Not only do they offer both practical and emotional support, but these communities also provide core beliefs, shared symbols, common practices, and a meta narrative that in combination lead to perceptions of comfort, meaning, and familiarity. Thus, within spiritual communities, older adults may feel upheld by far more than a series of individual relationships. Because most persons attend one congregation for many years, there is also a friendship circle within which one is and has been known and affirmed. In a similar way, Sterns and Dawson (this volume) point to the need for "age-friendly" work environments that foster positive attitudes and respect toward older workers, provide opportunities for retraining and self-directed learning, and make use of ergonomic designs that accommodate age-related changes in physical and cognitive functioning.

Although ethnicity and culture are also likely to influence resilience processes, they have received scant attention in the literatures on resilience in both childhood (Wright & Masten, 2005) and adulthood (Bonnano et al., this volume; Ong & Bergeman, 2004). As noted by Wright and Masten (2005), cultural evolution has equipped humans with many adaptive and protective systems (e.g., traditions, rituals, belief systems social supports) that enable

individuals, families, and communities to function in the context of adversity. Likewise, among minority groups, factors such as strength of ethnic identity, competence and comfort in relating to members of different groups, and racial socialization may be particularly important in dealing with challenges that arise from experiences of oppression and discrimination within the context in which they live.

From the perspective of future research, it will be important to study the extent to which factors found to promote resilience in one group are replicable across cultural groups and also how the same factor found across multiple groups might function differently in diverse cultural contexts. For example, for various cultural/ethnic groups, there is considerable difference in the relative importance placed on individualism, collectivism, and familism, and these dimensions might mediate resilience in different ways for different groups at different points across the life span (Bonnano et al., this volume; Hayslip & Han, 2009; Wright & Masten, 2005). Cultures also vary in terms of socioeconomic development and health care systems that are likely to moderate the effects of individual difference and cultural variables on adjustment (Bonnano et al., this volume). Even psychological resources like self-esteem, empowerment, and efficacy are culturally and contextually dependent, with each being more or less valued in different settings (Ungar, 2010).

THE FUTURE OF LATE LIFE RESILIENCE

Given the tremendous amount of complexity and unanswered questions surrounding the concept of resilience described in the preceding sections of this chapter, one is tempted to question its overall utility in the first place. As Kaplan expressed (2006), "so daunting is the number of such issues that have been raised with regard to the concept that some researchers and clinicians despair of ever being able to resolve these various issues" (p. 45). At the same time, however, Kaplan argued that the concept of resilience is indeed useful because it raises so many rich conceptual, theoretical, and methodological issues that challenge us to better understand higher order systemic adaptive functions across the life span. It also forces us to realize how incomplete our current understanding is regarding how positive outcomes are achieved in the face of adversity. As cautioned by Ryff et al. (this volume), we know vastly more about human illness, dysfunction, and disease than about what it means to be healthy and well because most of what is studied or treated under the rubric of human health remains chiefly focused on the negative. In turn, the concept of resilience has important implications for the development of future theory, prevention, and intervention (Vanderbilt-Adriance & Shaw, 2008).

Directions for Research

There is a growing consensus among resilience scholars that the field has fittingly shifted away from person-focused and variable-focused research examining correlates of positive outcomes to a more meaningful emphasis on how specific processes and mechanisms actually produce resilient outcomes within both children and adults (Goldstein & Brooks, 2005; Ong et al., 2009; Rutter, 2007, 2010; Wright & Masten, 2005). This direction is well stated by Lerner et al. (this volume), who maintain that scholars must ask

> What fundamental attributes of individuals (e.g., what features of cognition, motivation, emotion, ability, physiology, or temperament) among individuals of what status attributes (e.g., people at what portions of the life span, and of what sex, race, ethnic, religious, geographic location, etc. characteristics) in relation to what characteristics of the context (e.g., under what conditions of the family, the neighborhood, social policy, the economy, or history) are likely to be associated with what facets of adaptive functioning (e.g., maintenance of health and of active, positive contributions to family, community, and civil society)? (p. 258)

Thus, much like the field of gerontology, future scholarship on resilience will require an interdisciplinary approach that takes into account a wide range of biological, sociological, psychological, and environmental factors. In the context of new developments in the field of cognitive aging focusing on collaborative cognition (Margrett, 1999), it might be fruitful to explore resilience as both an attribute defined by the quality of individuals' interactions with one another. Consequently, resilience could be defined in both personal qualities and process-related terms for couples facing adversity (e.g., forced retirement, raising a grandchild, spousal illness, or death), leading to varying degrees of positive or negative outcomes for them personally and for their relationship. Likewise, resilience can exist at the level of the family, or the level of culture or society, wherein each is more or less adaptive to change (Szanton, Gill, & Thorpe, 2010), and each influences those resources to which individuals have access, contributing to both intraindividual and interindividual differences in resilience. For example, cultures that are either collectivistic or individualistic (see Hayslip & Han, 2009) may in varying degrees respond adaptively to natural disasters, war, famine, political upheaval, or economic downturn. Likewise, viewed systemically, families may be more or less resilient in the face of job loss, divorce, illness, or death (see Connidis, 2010; Coon, this volume; Walsh, this volume).

There are corresponding methodological challenges that go hand-in-hand with the types of complex research questions mentioned earlier by Lerner et al. (this volume). For example, as they and others have pointed out (Ong and Bergeman, 2004), there is a need for process analytic techniques that are sensitive

to the unfolding of complex dynamic relationships over time. Lerner et al. specifically note that, because it is not an attribute of either the person or the context, resilience should be investigated in a nonreductionist theoretical framework and by using change-sensitive multilevel developmental models that are on the cutting edge of developmental science. Bonnano et al. (this volume) similarly recommend the use of latent mixture growth modeling, a suite of statistical techniques stemming from structural equation modeling that allow investigators to identify empirically distinct response patterns across time according to the unique distributional properties of the data themselves.

A related methodological challenge in future resilience research concerns the diverse units of analysis in resilience research given that so many complex person–environment interrelations are likely to come into play. For example, as Lerner et al. (this volume) point out, "research must develop psychometrically sound indices of the person, of the context and, in particular, of the person-context relation." Measuring all three of these targets of assessment in an integrated way seems particularly challenging, especially given the complicated and evolving methodological issues involved in relational, fit, or "difference scores." Moreover, within the specific context of resilience research, measurement equivalence not only involves the typical concerns associated with different socio-demographic groupings (e.g., race, sex, culture) but also across a wide variety of ecological contexts such as family, work place, community, society, culture, and historical epoch (Coon, this volume; Lerner et al., this volume; Ong & Bergeman, 2004; Walsh, this volume). Presently, however, only a handful of resilience scales for use with adults exist and they are reported to be only moderate in quality (for a review, see Windle, Bennett, & Noyes, 2011). Complementing concerns about measurement, Coon (this volume) argues that a multimethod approach to the measurement of resilience has promise, relying on both quantitative and qualitative (e.g., the use of daily diaries) might show promise. As noted by Friedman and Martin (2011), another key methodological issue that for the most part, has been ignored in resilience research to date is the absence of a comparison group of persons who have not experienced a given stressful or traumatic life event. Moreover, as suggested by Lipsitt and Demick (2011), there may be indeed cohort differences in resilience, to the extent that individuals varying by year of birth might be either differentially exposed to or more or less affected by early and/or timely experiences with traumatic events such as famine, poverty, discrimination, or war (see Ardelt, Landes, & Valliant, 2010; Seligman & Fowler, 2011).

Yet another methodological challenge is that, because resilience encompasses a seemingly infinite number of biological, psychological, and environmental influences over time that are to some extent idiosyncratic, that is, particular to a given individual, both idiographic (within person) and nomothetic (between

person) research approaches are necessary (Goldstein & Brooks, 2005; Lerner et al., this volume; Ong & Bergeman, 2004). For example, any two or more older adults who face a similar adversity at any given time will undoubtedly vary in terms of gender, race, ethnicity, social class, protective resources, risk factors, and their personal history of other past or present adversities. Thus, the requisite conditions for resilience will unfold uniquely for each person, as dictated by one's history within particular social and environmental contexts (Hochhalter, Smith, & Ory, 2011). As a way of dealing with this issue, Ryff et al. (this volume) advocate the use of person-centered research methods, including a life history approach that permits moving back and forth from compelling single case biographical examples to group-level research.

Gerontological investigators should also pay greater attention to what types of sample are optimal for studying resilience, in view of the specific research goals at hand. For example, if the primary focus is on indentifying which factors are most helpful in the context of risk, then it is best to compare lower-risk and higher-risk subgroups. In contrast, if the primary aim is to identify protective factors that help adults at the highest level of risk, then it is unnecessary to involve lower-risk subgroups. According to Vanderbilt-Adriance and Shaw (2008), by examining different patterns of adjustment within a higher-risk group, investigators can identify those processes that contribute to positive outcomes by highlighting the variation in protective factors and related outcomes that might be otherwise obscured in a between-group design. Comparisons of older adults at varying levels of higher risk can also importantly lead to distinctions between protective factors that operate at higher risk but not to extreme risk.

Perhaps the most essential direction for the future, however, is for the resilience research agenda to become more broadly biological and not just psychological and psychosocial in its focus (Lavresky, this volume; Lavresky & Irwin, 2007; Rutter, 2007; Vanderbilt-Adriance & Shaw, 2008). According to Ryff et al. (this volume), there are four compelling reasons doing so: focusing solely on psychological resources runs the risk of being troublesomely insular; subjective psychological experiences become something that matters; when linked to biology and health, there is a shift from a primarily illness-centered focus to a concern for wellness as well; and funding for research may reflect a corresponding shift toward exploring linkages between psychological and physical health.

Numerous illustrations of these research directions are presented in this volume. For example, Fagundes et al. (this volume) highlight the value of identifying the primary physiological pathways through which both psychosocial (e.g., social support, behavioral interventions) and biological factors (e.g., sleep, nutrition, exercise) can directly affect immune function in later life. Lavretsky (this volume) describes how prospective determinants of resilience related to late life

mood disorders include diverse biological forces (i.e., neuroendocrine, immunological, neural circuitry, genetic, temperamental) in addition to environmental influences, and suggests that more research is needed to make the connection from these biomarkers to improving resilient treatment outcomes. Ryff et al. (this volume) summarize a wide array of research suggesting that the presence of psychological well-being is not only a desired phenomenological condition, but also appears to be advantageous for biological regulation and health via the influence of specific brain and biochemical processes. Stine-Morrow and Chui (this volume) explain how health and wellness likely impact cognitive in a number of ways, including direct biochemical and neural pathways that enhance plasticity, and indirect pathways of enhanced capacity to sustain engagement and agency in cognitively challenging situations. They further describe how cognitive capacity can also impact health, so that cognition and health may sustain one another through reciprocal causation (e.g., cognitive capacity appears to buffer the impact of stress on affect and is an important resource for the continued management of health and wellness). Ramsey (this volume) considers how research in neuroscience also has implications for spiritual practices such as prayer and meditation, and it needs to be studied intentionally by gerontologists with an interest in spirituality and resilience.

Although the aforementioned examples document that research efforts linking biological and psychosocial influences are well underway, much work lies ahead. One area that has been understudied in terms of resilience in both childhood and adulthood is the role of genetic-environmental interactions. Potential research methodologies include twin studies to examine the inheritability of positive adaptation and the collection of DNA to analyze the effects of genetic polymorphisms (see for discussion Rutter, 2007, 2010; Vanderbilt-Adriance, 2008). That such work is of a prospective, longitudinal nature would be especially advantageous (Lipsitt & Demick, 2011).

Finally, it is surprising how little attention has been paid to theory in the study of resilience within both the child and adult literatures. In many respects, resilience now exists as a broad concept in search of a theoretical framework to shape future research and practice. For example, within the present diverse theoretical perspectives are drawn upon the inclusion of various models of stress and coping, person-environment fit, and self-regulation. It remains unclear, however, to what extent such theoretical perspectives may need to be either revamped or blended to best accommodate future scholarship on resilience. Without greater attention to these issues, the study of resilience in later life runs the risk of becoming data rich yet theory poor. Interventions for facilitating resilience also require clear theoretical foundations to draw upon (Bonnano et al., this volume).

Implications for Practice and Policy

As mentioned earlier, the scientific study of resilience has implications for prevention and intervention efforts as well as for informing public policy. One challenge for future work, then, is to apply findings from basic research studies to the development and implementation of translational intervention programs (Diehl et al., this volume), be they empowerment-oriented or more strictly educational or therapeutic in nature. In turn, experimental intervention studies are valuable because they offer potent tests of hypotheses about how resilience functions in later life, particularly when the process of change is specified (e.g., increased social support or improved coping over time), wherein intervention alters this process, and these changes lead to a subsequent improvement in the targeted behavior of an individual or system. Walsh (this volume) has approached this issue clinically in terms of modifying family system functioning, and Coon (this volume) argues for research that is multileveled in its design and impact, as well as for greater attention to variations in both the short-term and long-term impact of resilience interventions across culture and race. Resilience experiments are also needed to identify who benefits most from what aspect of treatment, mediated by which changes, and to explore moderating and mediating effects (Wright & Masten, 2005). In this respect, greater attention to the mediating and/or moderating (buffering) role of resilience is warranted as well as to the possibility that resilience's impact on health or functioning is itself mediated by other factors (e.g., subjective well-being; see Burns, Anstey, & Windsor, 2011).

Bonnano et al. (this volume) raise a number of sobering yet important points regarding the use of interventions intended to foster resilience in the general public. For example, they wonder if such interventions might actually yield adverse outcomes by causing people who would otherwise respond to adversity adequately on their own to start questioning their own resilience or to downgrade their own expectations of risk. They further note that because so many risk and resilience factors coalesce in a cumulative fashion, it is debatable whether targeting one (or even several of these separate factors) can result in much of a positive change. Along similar lines, Ong et al. (2009) argue that because evidence has shown that the effects of individual childhood resources cannot override the effects of multiple social risks, it seems likely that resilience is likewise bounded in adults who are confronted by substantial cumulative risks. Additionally, Bonnano et al. (this volume) maintain that very few of the key factors identified thus far, because predictors of resilient outcomes (education; income) are realistically malleable anyway. In fact, it could also be argued that many personality traits associated with resilience are highly stable and resistant to change (see Mroczek, Spiro, & Griffin, 2006). Rutter (2010) perhaps summed up this argument best by noting that there is no scientific

basis at all for applying formulaic resiliency training programs and expecting them to have positive results. In these respects, a multileveled approach to treatment may, however, be efficacious as argued by Aldwin and Igarashi (this volume), wherein using the case of diabetes, intervention at both the individual (in enhancing body mindfulness), the familial/contextual (in supporting the individual with diabetes), and/or at the sociocultural (in the development of technology to more accurately diagnose or treat diabetes) levels may be quite effective. It may also be possible to enhance the accuracy and timeliness of individuals' abilities to accurately appraise as-yet-to-be experienced adverse events so as to enable them to avoid such events all together, or at least to minimize their impact. Those who are caring for an older person with dementia or for that matter, those who invest in the stock market are quite likely attuned to such appraisal processes.

It is tempting to conclude from the preceding paragraph that the only method for promoting resilience in the general population would be to minimize exposure to risk and adversity in the first place. However, even if such an approach were ever to be feasible (i.e., given the inherent cost and effort required), this too could be considered detrimental in view of past studies showing that resistance to environmental hazards may come from *exposure* to risks in controlled circumstances, rather than *avoidance* of risk (Lyons et al., 2010; Rutter, 2007, 2010). Thus, risk minimization might inadvertently prevent the development of personal resilience (i.e., steeling) over time.

In light of the aforementioned conundrums, then, what is the best way to foster resilience in adulthood? Hildon et al. (2010) recommend a dual approach to practice and policy for that consists of finding effective ways to minimize adversity and its impact where possib; and promoting systems and services that can deliver support when necessary. To buy into this approach, however, it is necessary for society to first recognize resilience as a dynamic process embedded within multiple systems of interactions and not view it as an individual trait. Otherwise, there may be a tendency to perceive those older adults who do not survive adversity as being personally at blame for not overcoming the obstacles they face (Wright & Masten, 2005). Additionally, Ungar (2010) noted that "a social ecological understanding of resilience is congruent with systemic approaches to intervention that emphasize the need to change social interactions, environmental structures, and the availability of health resources (like access to health care, safety, education, and social support) rather than just changing individuals to adapt to the threats posed to them" (p. 423). As noted earlier, Aldwin and Igarashi (this volume) advocate a multileveled strategy to foster resilience. Such a strategy could have as targets not only individuals, but also families, subcultures, or societies.

According to Rutter (2010), the best way to minimize the impact of adversity is by developing resistance coping strategies as well as psychological and physical defense mechanisms. Along these lines, Lavretsky (this volume) describes various psychosocial and psychopharmacological interventions that might be useful in enhancing both the physical and psychological defenses of older adults. These approaches include Tai Chi, which interrupts altered immune and endocrine response to stress and negative emotions by providing people with increased social contact and teaching them more adaptive coping strategies; physical exercise regimens that limit the effect of stress on immunity in chronically stressed older populations; mindfulness meditation techniques, which shift cognitive appraisals from threat to challenge, decrease ruminative thought, reduce stress arousal, and directly increase positive arousal states that affect telomerase activity and telomere length, thereby improving longevity; and various potentially resilience enhancing drugs that target responsiveness to reward, hypervigilance, and dysregulated physiological responses.

There are numerous public policy implications of resilience research as it applies to adults and older persons. Generally speaking, services to older persons and to caregivers in particular are driven by public policy (Wacker & Roberto, 2008), underscoring the understanding of resilience at multiple levels. Consequently, we argue that *any* legislation that affects older persons' well-being and/or enables them to sustain themselves in the face of illness, poverty, the demands of caregiving, or discrimination is relevant to the acquisition and maintenance of resilient behaviors. For example, Cox and Pebley (1999) have observed that children in low-income families, who are raised by grandparents, receive more welfare benefits (e.g., food stamps, Medicaid). With this in mind and in the context of the recent recession, legislation should ensure that such persons continue to receive such benefits. This is important in that Wacker and Roberto (2008) have observed that faulty and overgeneralized ideas about older persons contribute to political pressure to reduce Medicaid, Medicare and Social Security benefits to older persons and their families. Thus, confronting ageism via education of the public about growing older's positive and negative aspects (Hudson, 2002; Wacker & Roberto, 2008), providing support and respite to caregivers (Baker, Silverstein, & Putney, 2008; Coon, this volume; Family Caregiver Alliance, 2007/2008; Generations United, 2011; Walsh, this volume; Whitsett, 2011), creating aging-friendly communities (Wacker & Roberto, 2008), attending to the ability of the Aging Network to provide both cost efficient and effective social and medical services (O'Shaughnessy et al., 2008), and addressing racial inequities in health care (Family Caregiver Alliance, 2008), are all key to allowing adults and older persons to enhance and maintain high levels of functioning in the face of the demands of caring for a family member as well as the challenges of growing older.

CONCLUSION

As evidenced by the chapters in this volume, resilience is a multifaceted and complex concept that demands attention to a virtually unlimited array of interacting biological, psychosocial, and environmental variables that must be viewed from a truly interdisciplinary and life span developmental perspective. As such, the challenges associated with resilience are no strangers to the interdisciplinary field of gerontology. Although it is unlikely that consensus will ever be reached regarding the definition of resilience, its ultimate usefulness lies in the vital yet knotty theoretical, methodological, and practical questions that it thrusts on researchers, clinicians, and policy makers. Unlike seemingly similar concepts such as successful aging, productive aging, positive aging, and optimal aging, resilience is unique with respect to focusing gerontological attention to (a) the development of multifaceted strategies to enable persons to overcome the realities and hardships of aging, and to (b) linking earlier developmental processes in childhood and adolescence more precisely to physical and mental well-being in late life.

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CHAPTER 2

Resilience and Immune Function in Older Adults

Christopher P. Fagundes, Brandon L. Gillie, Heather M. Derry, Jeanette M. Bennett, and Janice K. Kiecolt-Glaser

ABSTRACT

Normal aging is marked by dysregulated immune function or immunosenescence. However, there is considerable variation in the degree to which adults are susceptible or resilient to immune dysregulation and disease. Stress is an important factor that can further alter the aging immune system. In this chapter, we review research that shows how stress can enhance age-related immune dysregulation in a variety of clinically relevant ways. We then explore what factors promote resilience to the negative immunological consequences of stress and aging. Finally, we take a lifespan perspective to examine evidence to suggest that some of the most important factors that augment or assuage an older adult's capacity for resilience to age and stress-related immune dysregulation develop long before he or she reaches older adulthood.

Humans are living longer than ever before. More than 12% of the U.S. population is older than the age of 65 years, and those who live at the age of 65 years can expect to live an additional two decades (Kung, Hoyert, Xu, & Murphy, 2008). Decreased infant mortality, better nutrition, and improved medical and environmental conditions are largely responsible for these dramatic increases. Accordingly, aging researchers have become increasingly interested in the notion of "successful aging." Although there are many definitions for what constitutes

successful aging, they all include freedom from chronic illness and disease, and thus successful aging is clearly dependent on a healthy immune system.

Normal aging is marked by dysregulated immune function or immuno-senescence. The average life expectancy for most of our evolutionary history was only 40–45 years (Aw, Silva, & Palmer, 2007). One of the biggest threats to reaching reproductive age was infectious disease. Consequently, strong immune responses early in life were essential for human survival (Aw et al., 2007). However, there was no evolutionary pressure to maintain strong immune responses after reproductive age. Accordingly, the immune system is susceptible to becoming increasingly dysregulated with age (Aw et al.).

As we age, cell-mediated immunity decreases (Vedhara & Irwin, 2005). Cell-mediated immunity protects the body against fungi, viruses that have invaded the cells, parasites, foreign tissues, and cancer (Vedhara & Irwin). Cellular immune decrements predict disease morbidity and mortality (Vedhara & Irwin). Aging is also characterized by elevated systemic inflammation (Vedhara & Irwin). Immune dysregulation is partly responsible for the higher prevalence of diseases such as cancer, heart disease, and infectious diseases found among older adults.

There is considerable variation in the degree to which adults are susceptible or resilient to immune dysregulation and disease. Resilience can be defined as the ability to maintain a stable equilibrium (Bonanno, 2004). Older adults who are resilient to premature immune dysregulation age more successfully than their counterparts. Understanding why some older individuals are more resilient to age-related immune dysregulation than others may help researchers identify the biological mechanisms that underlie healthy aging.

Stress is an important factor that can further alter the aging immune system. Psychological stress can diminish the strength of immune responses to vaccines, slow wound healing, reactivate latent viruses, enhance inflammation, and shorten telomeres (Glaser & Kiecolt-Glaser, 2005). Stress is particularly detrimental to older adults because they already have maladaptive age-related immune changes. Over the past three decades, there has been considerable work demonstrating that stress exacerbates age-related immune alterations.

In this chapter, we review research that shows how stress can enhance age-related immune dysregulation in a variety of clinically relevant ways. We then explore what factors promote resilience to the negative immunological consequences of stress and aging. Finally, we examine emerging evidence to suggest that some of the most important factors that augment or assuage older adults' capacity for resilience to age and stress-related immune dysregulation develop long before they reach older adulthood.

THE IMMUNE SYSTEM, STRESS, AND OLD AGE

Dementia family caregiving is an excellent model to study how a severe and chronic stressor alters older adults' immune function. Studies comparing older adult dementia family caregivers with age-matched noncaregiving controls have provided a wealth of information about (a) how stress exacerbates age-related declines in immunity and (b) what factors promote resilience to age-related immune decrements. Individuals with neurodegenerative diseases such as Alzheimer's disease and dementia often exhibit problem behaviors such as wandering, incontinence, and cognitive disturbance (Kiecolt-Glaser, Dura, Speicher, Trask, & Glaser, 1991). Caregivers must provide around the clock care. In addition to this demand, they also experience a type of "living bereavement" as they watch their partners slowly lose their personality and intellect (Kiecolt-Glaser et al., 1991). Older adult caregivers have poorer antibody responses to vaccination, poorer control of latent herpes viruses, slower wound healing, and higher systemic inflammation than their noncaregiver peers (Glaser & Kiecolt-Glaser, 2005).

Vaccination Response

Among adults aged 65 years or older, influenza and pneumonia infections are the fourth leading cause of death (Mustanski & Thompson, 2006). The Centers for Disease Control and Prevention (CDC) recommends that individuals aged 50 years or older receive a protective pneumococcal pneumonia vaccination and yearly influenza vaccinations. In order for a vaccine to protect against disease and illness, one must mount and maintain an adequate antibody response to the vaccine. Aging impacts parts of the immune system that facilitate the antibody response following immunization. People must be able to induce a strong antibody and T-cell response in order for their vaccine to be effective (Kiecolt-Glaser et al., 2003). Older adults show impaired activation and proliferation of T cells (Vedhara & Irwin, 2005). Stress can further exacerbate these age-related decrements.

Caregivers have poorer influenza vaccine responses than noncaregivers. In one study, among those individuals who showed a clinically significant antibody response, caregivers had lower antibody titers than controls. Furthermore, age intensified the effect of chronic stress on the vaccine response (Kiecolt-Glaser et al., 2003). In individuals older than 70 years, only 26% of caregivers had an adequate response compared to 60% of controls. These immunological differences were not explained by depression, even though caregivers were more depressed than controls. Another study demonstrated similar results; 16% of caregivers in contrast to 39% of controls showed a clinically significant antibody response to the influenza vaccine (Vedhara et al., 1999). Furthermore, caregivers' daily salivary cortisol output was greater than controls. Cortisol can modulate cell-mediated immunity, and thus caregivers' higher salivary cortisol is consistent with their poorer vaccine responses.

Researchers have also examined links between caregiver status and vaccine responses to the pneumococcal pneumonia vaccine (Glaser, Sheridan, Malarkey, MacCallum, & Kiecolt-Glaser, 2000). Pneumococcal pneumonia is caused by bacteria, and unlike the previously mentioned influenza vaccine, it is independent of T-cell activation. In a study comparing current and former caregivers to controls, all groups had similar pneumococcal pneumonia antibody titers before, and 2 and 4 weeks following vaccination (Glaser et al., 2000). However, at 3- and 6-month follow-up visits, current caregivers' overall vaccine-specific antibody titers were lower than those of former caregivers and controls. Accordingly, the stress associated with caregiving reduced the longer term protection of the pneumococcal pneumonia vaccine (Glaser et al., 2000).

In summary, caregivers respond more poorly to both viral and bacterial vaccines compared to age-matched controls. These findings suggest that the stress associated with caregiving diminishes the body's ability to mount an effective immune response to vaccines beyond age-related declines in immune function.

Control of Latent Viruses

Herpesviruses are able to evade destruction by the immune system and thus remain in a latent state after the primary infection. The cellular immune system, which controls these latent viruses, can be compromised with age. After people are infected with one of the herpesviruses, they carry the virus(es) with them for the rest of their lives. These viruses usually lay dormant and are asymptomatic. However, reactivation may occur when the cellular immune response is compromised or less competent, as is the case with older adults. With a less competent cellular immune response, herpesviruses can replicate more readily, as reflected by increased antibody production.

Control over latent viruses is maintained by T lymphocytes, or T cells, components of the cellular immune system (Vedhara & Irwin, 2005). Older individuals have poorer control over latent viruses than their younger counterparts because of age-related decrements in the cell-mediated immune response (Vedhara & Irwin). In response to reactivation of latent herpesviruses, the immune system produces antibodies. Higher antibody titer levels reflect greater reactivation of the virus. Older adults have higher levels of Epstein-Barr virus (EBV) IgG antibody than younger adults (Glaser et al., 1985). Additionally, higher concentrations of cytomegalovirus (CMV) mRNA, another member of the herpesvirus family, were detected more frequently in the urine of older adults, compared to younger adults (Stowe et al., 2007).

Latent herpesviruses have clinical relevance, and poorer control over these viruses can have clinical consequences. Latent herpesvirus reactivation is associated with increased morbidity and mortality among organ transplant

recipients and HIV patients. Herpesvirus reactivation may also lead to disease development. For instance, shingles, a consequence of varicella-zoster virus (VZV) reactivation, is more prevalent among older individuals. Shingles can be extremely painful for older adults (Glaser & Jones, 1994).

Stress can promote reactivation of latent herpesviruses. In one study, investigators examined dementia spousal caregivers and matched controls (average age is 67 years) over a 1-year period to understand how chronic stress affected EBV reactivation. Dementia caregivers had higher EBV antibody titers compared to matched controls (Kiecolt-Glaser et al., 1991). In addition, caregivers' peripheral blood lymphocytes proliferated less readily in response to mitogenic stimulation than controls (Kiecolt-Glaser et al., 1991). Accordingly, the stress associated with caregiving exacerbated age-related declines in cell-mediated immunity.

Another study addressed the relationship between caregiver status and herpes simplex virus (HSV)-1 (Glaser & Kiecolt-Glaser, 1997). Caregivers had higher HSV-1 antibody titers than controls. However, caregivers' and controls' antibody titers showed the same ability to neutralize the latent virus, suggesting that chronic stress decreases control over viral reactivation, but does not modulate the antibody function. Furthermore, caregivers had poorer in vitro memory T-cell proliferation to HSV-1 infected cells compared to controls (Glaser & Kiecolt-Glaser, 1997). These findings also suggest that chronic stress impairs older adults' ability to control reactivation of a latent herpesvirus over and above their natural age-related declines.

Inflammation

Inflammation is part of the body's initial and nonspecific response to invasion by foreign pathogens. The inflammatory response promotes the destruction and clearance of foreign particles and facilitates wound healing. Proinflammatory cytokines such as interleukin (IL)-6 and tumor necrosis factor-alpha (TNF-α) are chemical signals that increase immune cell trafficking to infection sites. Acute local inflammation in response to infection or trauma is beneficial; however, chronic low-grade inflammation can be maladaptive. Among older adults, having higher levels of inflammation is a risk factor for morbidity and mortality among older adults. (Vedhara & Irwin, 2005).

Sickness behaviors, fatigue, and depressive symptoms, which impair older adults' quality of life, can be consequences of inflammation. Physically ill humans and animals exhibit sickness behaviors when they are exposed to an infection. Sickness behaviors are functional in that they help sick individuals to restructure their perceptions and actions in order to conserve energy and resources (Dantzer, O'Connor, Freund, Johnson, & Kelley, 2008). Although feeling tired and lethargic is a normal and adaptive response to an acute infection, persistent low-grade

inflammation has been linked to fatigue and depression (Dantzer et al., 2008). Depression and fatigue can be side effects of long-term low-grade inflammation; they represent a maladaptive version of inflammatory induced sickness behaviors (Dantzer et al.). Higher levels of inflammation have also been associated with frailty and disability in older adults (Ershler & Keller, 2000).

Elevated inflammation is associated with cardiovascular disease, type 2 diabetes, Alzheimer's disease, osteoporosis, rheumatoid arthritis, periodontal disease, and cancer (Ershler & Keller, 2000). Peripheral proinflammatory cytokines rise with age. Compared to younger adults, elderly adults have higher levels of proinflammatory cytokines and C-reactive protein (CRP; Ershler & Keller). Given the role inflammation plays in contributing to these diverse negative mental and physical health outcomes, it is important to understand the factors that contribute to elevated inflammation among older adults.

Stress-induced changes in the autonomic nervous system (ANS) and hypo-thalamic-pituitary-adrenal (HPA) axis impact inflammation. Activation of the sympathetic branch of the ANS enhances inflammation. Stress heightens production of the catecholamines epinephrine and norepinephrine by the sympathetic nervous system. Norepinephrine induces nuclear factor-kappa B (NF-κB) transcription, which enhances proinflammatory cytokine production (Bierhaus et al., 2003).

Several mechanisms work to limit the inflammatory response to stress. The parasympathetic branch of the ANS works in opposition to the sympathetic branch. Stress reduces parasympathetic activity. Higher parasympathetic activity can lower inflammation by inhibiting proinflammatory cytokine production (Tracey, 2009). Therefore, the combination of lower parasympathetic activity and higher sympathetic activity results in elevated inflammation.

Cortisol is also produced in response to stress. Although cortisol acts to inhibit proinflammatory cytokine release in the short term, chronically elevated levels of cortisol can *sometimes* lead to glucocorticoid insensitivity. Glucocorticoid insensitivity allows immune cells to produce proinflammatory cytokines in an unregulated environment, thereby raising inflammation (Miller, Cohen, & Ritchey, 2002).

Considerable evidence suggests that the chronic stress of caregiving for an impaired family member can enhance inflammation. For example, older women who were dementia family caregivers had higher IL-6 levels than older women who were planning a housing relocation as well as nonmoving and noncaregiving controls (Lutgendorf et al., 1999). These findings were particularly provocative because the caregivers were approximately 6–9 years younger than the women in the other two groups (Lutgendorf et al., 1999). Another study showed that caregivers had higher levels of IL-6 than age-matched controls (von Känel et al., 2006).

Caregiving stress may also accelerate age-related increases in inflammation. Caregivers had a fourfold higher rate of increase in IL-6 across a span of 6 years

compared to noncaregivers (Kiecolt-Glaser et al., 2003). Importantly, epidemio-logical studies have found that individuals with IL-6 levels in the highest quartile (more than 3.19 pg/ml) had a twofold greater risk of mortality compared to those with lower levels of IL-6. Accordingly, these data suggest that caregivers would reach this risky IL-6 level, on average, by the age of 75, whereas noncaregivers would not do so until the age of 90 years.

Heightened inflammation can persist even after caregiving ends. Former caregivers continued to have a mean annual increase in IL-6 compared to current caregivers even several years after the death of the spouse (Kiecolt-Glaser et al., 2003). Accordingly, when older adults experience chronic stress over a long time, they may not be able to recover even when the stressor ends.

Wound Healing

Wound healing is an important response to trauma. Proper wound healing is critical for maintaining good health because it reestablishes the body's first line of defense against foreign pathogens. The inflammatory phase, which begins soon after trauma, is important for all other phases (Christian, Graham, Padgett, Glaser, & Kiecolt-Glaser, 2006). Proinflammatory cytokines prepare injured tissue for repair by enhancing phagocytic cell recruitment and activation (Lowry, 1993). In addition, proinflammatory cytokines regulate fibroblasts and epithelial cells in order to remodel damaged tissue (Lowry).

Wound healing occurs in phases. Healing begins with an inflammatory phase in which immune cells clear bacteria and debris from the wound site. In the proliferative phase, phagocytes migrate to the site and proliferate to facilitate regrowth of tissue and capillaries. The final step of wound remodeling restores tissue structure and function. Throughout this cascade, proinflammatory cyto-kines play a role in protecting against infection and enhancing phagocytic cell recruitment (Glaser et al., 1999). Successful healing at one stage depends on adequate completion of the preceding stage.

Older adults' wounds do not heal as fast as younger adults, putting them at increased risk for infection and associated health risks. Older adults suffer from greater rates of morbidity and mortality following surgery (Kiecolt-Glaser, Page, Marucha, MacCallum, & Glaser, 1998). Further, inadequate wound healing leads to poor surgical outcomes and stressful postoperative pain (Kiecolt-Glaser et al., 1998). Impaired wound healing may be one mechanism by which older adults' recovery is delayed (Kiecolt-Glaser et al., 1998).

Chronic stress further impairs wound healing among older adults. In one study, caregivers and noncaregiving controls were given a punch biopsy wound and subsequently monitored to compare differences in healing over time. Caregivers took an average of 9 days longer to heal than the noncaregivers,

regardless of age (Kiecolt-Glaser, Marucha, Malarkey, Mercado, & Glaser, 1995). Further, it appeared that the chronic stress of caregiving disrupted the early inflammatory phase of wound healing. The greatest differences in wound size between caregivers and noncaregivers occurred early in the healing process.

In another study, researchers used a suction blister procedure to examine how stress contributes to the initial phase of wound healing. Higher levels of perceived stress were associated with lower production of inflammatory cytokines IL-1 and IL-8 at a suction blister wound site in the first 24 hours of wound healing (Glaser et al., 1999). This first phase of wound healing is a critical period that may predict delays in the rest of the wound healing process. Accordingly, chronic stress interferes with older adults' ability to heal wounds in a timely manner, increasing the risk of infection. Given the immune dysregulation that occurs with age, delays in wound healing may increase the risk of negative health consequences by enhancing infection risk.

These findings may have important implications for older adults who undergo surgery. Older adults are at heightened risk for surgical complications compared to younger adults, partially caused by infections (Kiecolt-Glaser et al., 1998). Furthermore, stress enhances surgery-associated risks among older adults. When researchers classified younger and older surgical patients based on preoperative anxiety, high anxious older adults experienced more disability days and complications than their younger and less anxious counterparts (Linn & Jensen, 1983).

Telomeres

Stress may also facilitate cell aging by reducing telomere length. A telomere is a group of nucleoprotein complexes that caps chromosomes to protect and stabilize their integrity across the lifespan (Epel et al., 2004). Each time a cell replicates, telomeres shorten. Telomere length is a proxy for a cell's biological age; cells with shorter telomeres reach the critical minimum length more rapidly and subsequently die more quickly than cells with longer telomeres (Epel et al.). Shorter telomeres have also been linked to mortality (Epel et al.). In addition, stress-related changes in inflammation can impact telomere length (Kiecolt-Glaser et al., 2011).

Chronic stress shortens telomere length. In a landmark study, Epel and colleagues (2004) examined the relationship between perceived stress and telomere length in mothers who provided care for a chronically sick child and mothers who raised a healthy child (Epel et al., 2004). Longer duration of caregiving predicted shorter telomere length and other markers of cellular aging, independent of chronological age. Greater perceived stress also predicted greater cellular aging for both caregivers and controls. In fact, those who reported high stress had shorter telomeres, representing 9–17 years of additional cellular aging compared

to the low stress group (Epel et al.). Consequently, the chronicity and perceived magnitude of a stressor are important factors in determining its influence on cellular aging. Stress may actively age the immune system by contributing to age-related reductions in telomere length. This could have major implications for disease and mortality among older adults.

RESILIENCY

We reviewed a large body of evidence suggesting that aging is related to increased immune dysregulation, and stress exacerbates this process. However, not everyone experiences age-related immune decrements at the same rate. Understanding what factors promote and hinder resilience in the face of stress and age-related immune system declines may help older adults age more successfully.

The field of psychoneuroimmunology has focused most of its attention on how psychological factors (i.e., stress and depression) impair immune function. There is a good reason for this; the primary pathways through which the psyche directly influences immune function are negative. Stress-related increases in autonomic and HPA activity alter immune function. However, psychological factors can buffer the negative impact of stress. Likewise, practicing good health behaviors can boost better immune function and possibly buffer stress-related immune alterations (Figure 2.1).
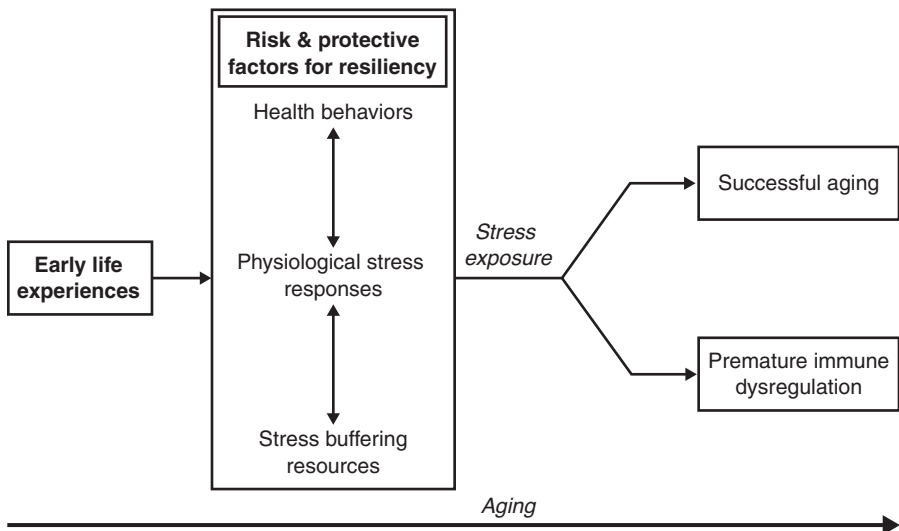

FIGURE 2.1 Developmental pathways to resilience in older adulthood.

Social Support

Considerable evidence suggests that those who report receiving more support from others enjoy better mental and physical health (Uchino, Cacioppo, & Kiecolt-Glaser, 1996). Older adults who have healthy relationships with family and friends have lower rates of morbidity and mortality than those who do not (Uchino et al., 1996). Importantly, social support may be one possible mechanism for these findings as it can buffer the negative physical and mental effects of stress.

Older adults face unique hurdles in their ability to maintain social relationships. People often lose parts of their social network when they retire. Furthermore, frail older adults are less mobile and thus less able to engage in certain social activities (Charles & Carstensen, 2010). Mortality increases with age, and thus older adults are more likely to lose key social support figures such as friends, siblings, and their spouse than younger adults (Charles & Carstensen). However, older adults are also more likely to strengthen and optimize the social ties they do have (Charles & Carstensen). On average, older adults report greater satisfaction with their relationships than younger adults (Charles & Carstensen).

Although social support is important in and of itself, it can also buffer the negative immunological consequences of caregiving. In one study, caregivers who perceived more support and closeness had better augmentation of natural killer (NK) cell activity to interferon-gamma and recombinant IL-2 (Esterling, Kiecolt-Glaser, Bodnar, & Glaser, 1994). NK cells are an important function of the innate immune system that kill viruses and plays a role in tumor rejection. Data from a longitudinal study suggested that older caregivers who had lower social support were more likely to show more immunological declines across several different measures of cellular immunity 1 year later (Kiecolt-Glaser et al., 1991).

Social support can also influence inflammation. Among women with advanced stage ovarian cancer, those who reported higher levels of social support had lower plasma levels of IL-6 (Lutgendorf, Anderson, Sorosky, Buller, & Lubaroff, 2000). The relationship between social support and inflammation may be exacerbated by health behaviors such as sleep. Women who reported poorer sleep and poorer social relationships had higher levels of IL-6 than those who only had one of these risk factors (Friedman et al., 2005). Thus, social networks and perception of support have been associated with a number of different aspects of immune function in older adults.

Exercise

Physical activity can lower inflammation. In a randomized trial, older adults (aged 60–83 years) who participated in a cardiovascular exercise program for 10 months had lower CRP and less total and central trunk adiposity than those who participated in noncardiovascular flexibility training (Vieira et al., 2009).

Furthermore, reduced trunk fat was associated with reduced CRP (Vieira et al.). Other studies have also found an association between physical activity level and lower levels of IL-6 and CRP (Ford, 2002).

Exercise may also reduce the physiological consequences of stress. Some evidence suggests that individuals who are physically fit may have a smaller inflammatory response to acute mental stress than those who are not (Hamer & Steptoe, 2007). Thus, exercise helps to maintain immunological homeostasis. Exercise is also associated with increased IL-10, an anti-inflammatory cytokine (Jankord & Jemiolo, 2004).

Sleep

Sleep is essential for a healthy immune system. In a longitudinal study of older adults, better sleep quality was associated with lower levels of IL-6, and shorter sleep latency was linked to decreased CRP. Those with sleep problems had higher inflammation than those who do not. In fact, as few as 4 hours of sleep loss resulted in greater NF-κB activation (a pathway that prompts inflammatory cytokine release) and higher morning levels of IL-6 and TNF-α, compared to a night of uninterrupted sleep (Irwin, Wang, Campomayor, Collado-Hidalgo, & Cole, 2006).

Nutrition and Weight

Large-scale epidemiological studies demonstrate a strong relationship between diet and inflammation. Diets high in refined grains, processed meat, sugar, and saturated and trans-fatty acids and low in fruits, vegetables, and whole grains promote inflammation (Kiecolt-Glaser, 2010). High-fat meals can increase glucose levels and triglycerides, which stimulate the production of IL-6 and CRP (Kiecolt-Glaser). In contrast, higher fruit and vegetable intake is associated with lower inflammation, which may counteract the proinflammatory responses to high-saturated fat meals (Kiecolt-Glaser).

Abdominal fat is a prime source for inflammation. Accordingly, those who are overweight, especially in the abdominal region, have higher inflammation and more disease (Després & Lemieux, 2006). Because both diet and stress impact the immune system, the interaction between these two factors is likely to be a provocative area of research in the future.

Behavioral Interventions

Interventions may buffer stress-induced immune dysregulation. Spousal dementia caregivers who participated in a nonrandomized stress management intervention were more likely to have a fourfold antibody increase 6 weeks postvaccination, compared to control caregivers who did not receive the intervention (Vedhara et al.,

2003). Furthermore, caregivers in the intervention group did not differ from non-caregiving controls in terms of their antibody response to the influenza vaccine (Vedhara et al., 2003). Although these results suggest that behavioral interventions may lessen stress-induced vaccine impairments, they must be interpreted cautiously because participants were not randomly assigned to conditions.

Stress-reducing interventions may also enhance latent antibody virus control and NK cell activity. In a randomized controlled trial, researchers examined whether older adults who received training in progressive relaxation or had social contact with a college student had changes in HSV-1 antibody titers compared to older adult controls. Older adults who were assigned to the relaxation condition had lower HSV-1 antibody titers following the intervention, whereas those who were assigned to the college social contact group and the control group had no changes in antibody titers (Kiecolt-Glaser et al., 1985). Individuals in the relaxation condition also exhibited higher NK cell activity up to 1 month after the end of the intervention. Taken together, these two studies suggest that psychological interventions may have positive effects on the immune response in older adults.

Relaxation exercises may buffer against immune dysregulation. *Tai Chi* is an exercise that incorporates light aerobic activity, relaxation, and meditation. In a study that randomly assigned older adults to either a 25-week Tai Chi intervention or a health education course, those who were assigned to the Tai Chi intervention had greater cell-mediated immunity to VZV than those assigned to the health education intervention (Irwin, Olmstead, & Oxman, 2007). Cell-mediated immunity to VZV was assessed by measuring the frequency of peripheral blood mononuclear cells (PBMCs) and CD4+CD45RO+T cells or memory T cells that proliferate in response to VZV antigen. Compared to preintervention levels, the Tai Chi group also reported improved physical functioning, decreased pain, increased vitality, and improved mental health after the intervention.

Similar to Tai Chi, yoga is an accessible form of exercise that confers immunological benefits. In a randomized study of chronic heart failure patients, those who participated in an 8-week yoga class, in addition to receiving standard medical treatment for heart failure, had reduced IL-6 and CRP from pretreatment to posttreatment. However, IL-6 and CRP levels did not change among those who only received standard medical care for heart failure (Pullen et al., 2008). Yoga is also effective in healthy populations and may bestow advantages with experience. One study compared markers of inflammation in novice and expert yoga practitioners. Serum IL-6 was 41% lower in expert yoga practitioners, compared to novice practitioners (Kiecolt-Glaser et al., 2010). In addition, the novice group was 4.75 times as likely to have detectable CRP levels

compared to the expert group (Kiecolt-Glaser et al., 2010). Different inflammatory responses to stress may account for disparities between novice and expert yoga practitioners. Indeed, following an acute stressor, stimulated IL-6 production in the expert group was lower compared to the novice group, suggesting that extended yoga practice may buffer stress-induced proinflammatory cytokine elevations (Kiecolt-Glaser et al., 2010).

EARLY ADVERSITY

Although several factors offer protection against the effects of stress and immune dysregulation in older adults, the skills and behaviors that lead to resilience develop long before one reaches old age. In particular, early developmental experiences can "set the stage" for either vulnerability or resilience in later life. Early adversity is a risk factor for poorer health among older adults (Hertzman, 1999). Dysregulated immune function may be one biological pathway that explains these links.

Early life adversities can leave individuals more vulnerable to dysregulated immune function in older adulthood (Hertzman, 1999). For example, in a study of healthy older adult family dementia caregivers and noncaregivers, average age of 70 years, those who experienced emotional, physical, or sexual abuse as children were more likely to have higher IL-6 and TNF-α levels (Kiecolt-Glaser et al., 2011). These findings may help explain some of the well-known associations between child adversity and poor physical health in old age.

Early adversity has also been linked to cellular aging. Recall that telomere length is a proxy for cellular aging. Healthy older caregivers (average age of 70 years) who were abused as children had shorter telomeres than those who were not abused. Importantly, the difference between abused and nonabused older adults translated into a 7- to 15-year lifespan difference. These associations were detectable even among distressed dementia caregivers (Kiecolt-Glaser et al., 2011).

Researchers have yet to establish *why* early adverse experiences have such profound effects. Identifying the pathways through which troubled early life experiences are linked to poor immune function in older adulthood may be crucial to understanding the developmental antecedents of resilience for age-related immune dysregulation. Those with adverse early experiences may be particularly vulnerable because they have multiple risk factors that enhance immune dysregulation.

Early adversity makes people more physiologically reactive to stress (Repetti, Taylor, & Seeman, 2002). Those who experienced early life adversities have more pronounced stress-induced HPA and sympathetic responses than those who had happy childhoods (Hertzman, 1999; Repetti et al., 2002). A physiological profile

characterized by elevated stress-induced sympathetic and HPA activity can lead to dysregulated immune function (Bierhaus et al., 2003; Miller et al., 2002).

Adverse early life experiences also influence the degree to which one perceives events as stressful (Hertzman, 1999; Repetti et al., 2002). Adults who experienced adverse childhood experiences report more frequent daily hassles throughout their life than those who did not have these experiences (Luecken, Kraft, Appelhans, & Enders, 2009). They are also more likely to perceive events in ambiguous situations as more stressful than their counterparts (Luecken et al., 2009). Accordingly, adults who had troubled childhoods experience more severe and frequent stress than those who had happy childhoods.

Those who experienced early adverse events also cope with stress less effectively than others. Early adversity is linked to poorer emotional control and worse social skills (Hertzman, 1999). Accordingly, compared to their counterparts, those with troubled childhoods have less emotional and social resources available to manage stress. Not surprisingly, these individuals are more likely to smoke, abuse alcohol, and eat unhealthy than people who had happy childhoods (Repetti et al., 2002). These factors also contribute to dysregulated immunity later in life.

Caution is warranted when drawing conclusions about relationships between early adversity and resilience because the majority of studies linking adverse early experiences to physical health have used retrospective designs. Accordingly, we cannot say with certainty that early adversity *leads* to less resilience. Although challenging, future work using prospective designs are needed in order to strengthen causal inference.

In summary, compared to adults who had happy upbringings, those who had troubled childhoods experience more stress throughout their lives and cope with it less effectively; accordingly, resilient outcomes are much more difficult to obtain for these individuals. Chronic stress throughout life may prematurely age the immune system, making these individuals particularly vulnerable to immune dysregulation later in life. The "wear and tear" hypothesis suggests that stress has a cumulative effect on the aging process (McEwen, 1998). Although the body can recover from transient stressors, chronic stressors progressively impair the body's ability to maintain normal function over time. Chronic overactivation of the ANS and HPA axis increases allostatic load that is the long-term "cost" associated with frequent and prolonged adaptation to stress (McEwen). People who experience more frequent and prolonged stress throughout life more quickly accumulate allostatic load and have poorer health later in life (Hertzman, 1999). Accordingly, the "wear and tear" hypothesis suggests that resilience to immune dysregulation and disease in old age begins at a very young age. Early adversity puts people at risk for a combination of risk factors that impede resilience to immune dysregulation.

The majority of stress interventions have focused on older adults. This is for good reason because older adults are more at risk for the negative immunological consequences of stress. However, interventions aimed at reducing stress among younger individuals may be particularly beneficial as well. If the long-term consequences of stress are largely cumulative, and one's capacity to manage stress develops in early childhood, then one way to enhance resilience later in life may be to promote resilience early in life. Accordingly, a promising direction for future research is to design and evaluate stress interventions for younger individuals.

CONCLUSION

Immune dysregulation occurs naturally with age and can be exacerbated by stress. In particular, caregiving stress has been associated with impaired immune function including decreased antibody response to vaccination, poor control over latent viruses, delayed wound healing, and elevated inflammation. Additionally, chronic stress may actively age the immune system. Despite these challenges, individuals can promote resilience by practicing good health behaviors, learning to manage stress, and fostering healthy relationships. These practices are best developed well before one reaches old age because the negative consequences of stress may be cumulative. Accordingly, dysregulated immunity in old age can represent a lifetime of psychological and psychophysiological alterations. To understand and promote resilience in old age, aging research must take a lifespan approach to understand and promote a healthy immune system at all ages.

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CHAPTER 3

Resilience, Stress, and Mood Disorders in Old Age

Helen Lavretsky

ABSTRACT

This chapter summarizes the literature on resilience and vulnerability factors related to late-life mood and anxiety disorders. The author identifies key concepts and definitions of resilience and reviews psychosocial and biological factors contributing to resilience that are universal across age groups, as well as factors that are unique to aging. The author reviews currently existing and potentially useful intervention approaches to promote resilience and well-being as a prevention strategy for late-life mood disorders. Views on future direction in resilience research and interventions targeting resilience are further offered.

INTRODUCTION

Global population aging presents various challenges worldwide. Human life expectancy has increased steadily for the last 200 years. The continuing increase in life expectancy in the last 50 years has been almost entirely attributable to a decline in late-life mortality and secondary to medical advances and improved socioeconomic conditions. However, quality of life in later years does not necessarily follow increased longevity. Getting older can be stressful because of multiple losses such as financial, psychosocial, personal, a decline in health, independence, and cognitive and functional abilities. According to the cybernetic theory of stress, coping, and well-being, *stress* is a negatively perceived discrepancy between an individual's perceived and desired states important for his

or her functioning (Edwards & Cooper, 1988) that is particularly relevant for aging adults. As George E. Vaillant (2002) pointed out in his book *Aging Well*, "The major factors involved in negative personality change at midlife are the same factors that caused negative aging at 70: bad habits, bad marriage, maladaptive defenses, and disease."

Resilience to stress is one of the factors that had numerous meanings in prior research, but it generally refers to a pattern of functioning that is indicative of a positive adaptation in the context of adversity. People who are resilient display a greater capacity to quickly regain equilibrium physiologically and psychologically following stressful events, and are able to sustain it in the face of adversity. In a broader sense, resilience refers to the ability to maintain biological and psychological homeostasis under stress. However, components of resilience may vary with context, time, age, gender, and cultural origin. The question remains whether a certain level of adversity or a threshold is required before resilience becomes a meaningful concept, or resilience can be viewed as a dynamic process of adaptation to everyday challenges of growing old. The latter appears to be more useful in explaining longevity and successful aging.

As noted by Masten (2001), resilience occurs in the context of ordinary lives. Some of the resilience constructs have been tested in centenarians who successfully survived into a very old age despite many adversities (e.g., they outlive their families, have low income and multiple chronic illnesses). Three aspects of resilience have been linked to longevity, quality of life, and optimal functioning and well-being in these survivors: "robust personality" with low levels of neuroticism and high conscientiousness and extraversion, cognitive reserve, and social and perceived economic resources. On the other hand, depression in late-life is associated with increased mortality, morbidity, and poor quality of life (Lavretsky & Kumar, 2002; Lavretsky & Zheng et al.) The search is on for new interventions to boost resilience in aging adults that can prevent or reverse negative impact of depression on quality of life. In this chapter, we will review the literature pertaining to such efforts in defining resilience and positive emotions that are crucial in protecting against chronic stress and late-life mood and anxiety disorders.

RESILIENCE TO ADVERSITY IN AGING

All humans are destined to experience adversities throughout their lives that are likely to impact their health and quality of life. However, trajectories of health and function in later life can vary significantly depending on the individual. Typical adversities experienced in the context of aging include chronic illnesses, cognitive impairment, psychosocial stress of caregiving or personal losses of people, independence, and financial. However, individuals react very differently

to these adversities: Some succumb to depression and early death as a result of these adversities, and some continue to lead a life of personal fulfillment despite those restraints. Some questions one may consider: What factors define increased risk for disease and mortality and what protective factors lead to successful aging? Can we reverse negative outcomes of exposure to adversity? What role does individual resilience play in this adaptation to aging? Is it possible to estimate rates of resilience in the population of older adults or it could be only appreciated in a context of an individual? Clearly, the answer is complex and not uniform. A host of genetic, familial, social, and cultural elements, as well as the nature of stressors and expectations of the future can influence individual differences in resilience. However, the rates of depression in at-risk populations would give a crude estimate of individuals with reduced psychological resilience within that population. Models of chronic stress exposure generated mental illness in older adults have been studied in several populations such as the chronically medically ill, those with spousal bereavement, and family dementia caregivers that simply support the stress–health relationships between stress, coping, and mental illnesses.

Resilience in Chronic Illness

In the context of chronic illnesses, such as heart disease and cancer that are on the rise because of increased age span, resilient individuals are the ones who recover and adapt. The rate of depression in stroke, heart disease, and in certain cancers can approach 40%–50% that would give an estimate of the proportion of individuals with reduced psychological resilience.

Friedman and Booth-Kewey (1987) analyzed the relation between a disease-prone personality, in which negative emotions (depression and anxiety) associated with an increased risk of chronic disease. Increasing evidence suggests that neuroticism predicts increased distress and disease. But it is unclear whether positive traits like optimism predict a lack of disease or a more positive perception of health status. In these individuals, *health* is defined as a general sense of well-being, accompanied by physical well-being, mental, social, and functional improvement (World Health Organization, 2002). Health is more than a singular outcome to achieve; it involves a process of challenge, negotiation, and adaptation that unfolds over the course of life (Aldwin, Spiro, & Park, 2006). Together healthy aging and longevity can serve as markers of personal resilience, and rates of mortality and morbidity (e.g., rates of depression associated with physical illness) can serve as a proxy for estimating proportions of less resilient individuals in the groups of interest. Kern and Friedman (2010) described personality features like conscientiousness related to greater productivity, physical health, and longevity, involving better health habits, involvement in life, and better relationships.

Therefore, in the context of adaptation to chronic illness, resilience involves flexibility and adaptability to stress rather than just hardiness or the absence of disease. Further, psychological and physical resilience are not necessarily separate entities, but rather two sides of the coin: Temperamental predisposition, internal stress and coping, social relationships, and health behaviors may all be relevant to whether an individual will thrive in the face of challenge or succumb to depression and disease.

Resilience in Bereavement

Another common stressor in older adults is bereavement. According to the U.S. Census Bureau, in 2003, approximately 14% of men and 45% of women 65 years and older are widowed. Among those aged 85 years and older, this increased to 43% of men and 80% of women. About 33% of surviving older adult spouses will experience a "complicated bereavement" (CB), placing them at significantly for major depression and high morbidity and mortality. Bereavement increases risks of depression and mortality (Fry & Debats, 2010). Previous research has identified a number of psychosocial resources that serve as protective resources and promote health and well-being, such as community/familial support that involves affectional ties and social engagement. These resources protect against stress and promote resilience. Factors that influence morbidity and mortality are beliefs of self-efficacy, self-control, and self-esteem. Spirituality and religious beliefs can compensate for lack of close relationships following trauma and loss (Granqvist & Hagekull, 2000) and can protect from early mortality and morbidity. The positive association of psychosocial resources (such as spiritual growth, family stability, social engagement, commitment to life tasks) with increased longevity may represent important resource domains that contribute significantly to widow's resilience and healthy longevity assisting with psychological adjustment following the loss. It is plausible that lifespan may be lengthened if they had a number of personal and psychosocial resources including spirituality, family stability, and social engagement. Thus, it is argued that those with a larger number of psychosocial resource networks are more protected against early mortality. Intervention programs for older widows can concentrate on coping with grief and mobilization of psychosocial resources as a means to preserving resilience and longevity.

STRESS VULNERABILITY AND LATE-LIFE MOOD DISORDERS: CAREGIVER STRESS AND DEPRESSION

Studies of caregiver stress have supported the dominant view of the diathesis–stress model emphasizing stress-induced mental illness, particularly, in the presence of a neurobiological or genetic vulnerability. Stressful life events are

robust predictors of the onset or recurrence of a variety of neuropsychiatric disorders. Different types of stress such as acute stress, chronic stress, or early childhood trauma may differentially influence the type and severity of a neurocognitive or neuropsychiatric disorder that an individual may develop with age or may increase the risk of developing comorbid medical and psychiatric conditions. The relationship of adversity to illness relationships in special populations (e.g., caregivers) has provided epidemiological estimates of the rates of the subsequent psychiatric disorders following exposure to stress. In a case of family dementia caregivers, the prevalence and incidence of depression are estimated to be 50%, which means that at any given time, 50% of dementia caregivers can be diagnosed with clinical depression, but the other 50% are not depressed (Lavretsky, 2005). Knowledge concerning the temporal relationship between adverse experiences and the onset of anxiety and depressive disorders remains sparse despite life stress forming a pivotal component to social, neurological, and cognitive science models of their etiology. Acute and chronic stress puts older adults at higher risk for depression and declining resilience and quality of life.

Caregiver stress in family caregivers taking care of their relatives with dementia has been a recognized model of chronic stress model resulting in high levels of depression, anxiety, and mortality (Lavretsky, 2005). The majority of dementia caregivers are elderly, with women providing the highest levels of care. These caregivers are twice as likely to report physical strain and high levels of emotional stress as a direct result of caregiving responsibilities. Caregiver burden and depression are related to level of patient severity of dementia, disability, and behavioral disturbances. As a result of the impaired resilience to stress with advancing age, an increased allostatic load, tolerance of stress may result in cardiovascular disease and decline of health and quality of life. In a longitudinal cohort study of 400 older spousal caregivers, caregivers who experienced mental or emotional strain related to caregiving had mortality risks 63% higher than noncaregiving controls (Lavretsky).

Pinquart and Sörensen (2006) integrated findings from 84 articles on differences between caregivers and noncaregivers in perceived stress, depression, general subjective well-being, physical health, and self-efficacy. The largest differences were found with regard to depression, stress, self-efficacy, and general subjective well-being. Differences in the levels of physical health in favor of noncaregivers were statistically significant but relatively small. However, larger differences were found between dementia caregivers and noncaregivers than between heterogeneous samples of caregivers and noncaregivers.

Bereavement can further fuel caregiver depression. Aneshensel, Botticello, and Yamamoto-Mitani (2004) described trajectories of evolving depressive symptoms among caregivers following bereavement and connects these trajectories to
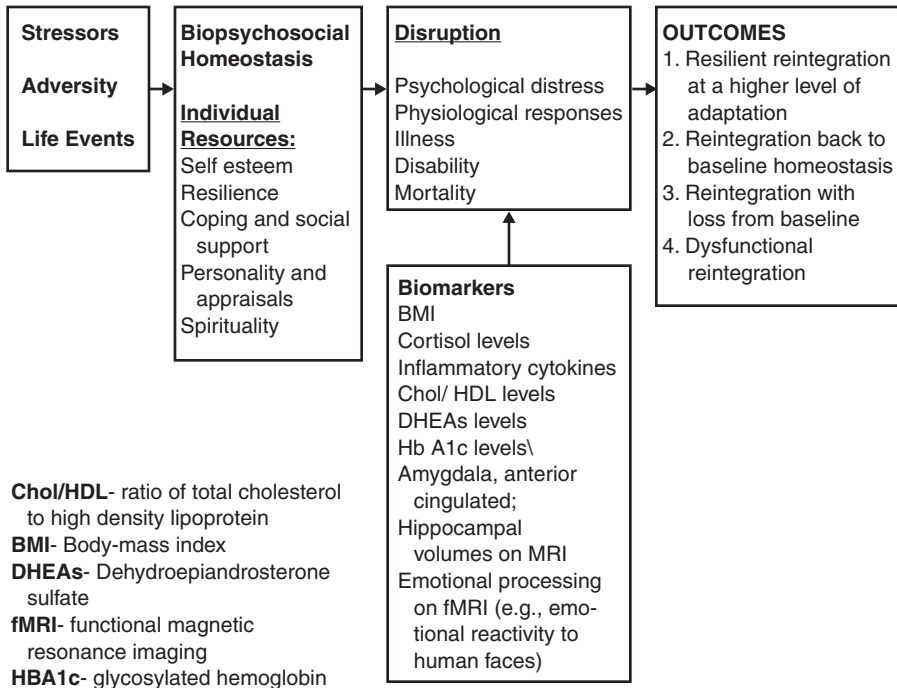

Stressors
 	
Adversity
 	
Life Events
	Biopsychosocial
	Homeostasis
	
	Individual
	Resources:
	Self esteem
	Resilience
	Coping and social
	  support
	Personality and
	  appraisals
	Spirituality
		Disruption
		
		Psychological distress
		Physiological responses
		Illness
		Disability
		Mortality
			OUTCOMES
			1. Resilient reintegration
			   at a higher level of
			   adaptation
			2. Reintegration back to
			   baseline homeostasis
			3. Reintegration with
			   loss from baseline
			4. Dysfunctional
			   reintegration

Chol/HDL- ratio of total cholesterol to high density lipoprotein
BMI- Body-mass index
DHEAs- Dehydroepiandrosterone sulfate
fMRI- functional magnetic resonance imaging
HBA1c- glycosylated hemoglobin

Biomarkers
BMI
Cortisol levels
Inflammatory cytokines
Chol/ HDL levels
DHEAs levels
Hb A1c levels\
Amygdala, anterior cingulated;
Hippocampal volumes on MRI
Emotional processing on fMRI (e.g., emotional reactivity to human faces)

FIGURE 3.1 Theoretic model of resilience.
Source: Adapted from Lavretsky and Irwin, 2007

earlier features of caregiving using life course and stress process theory in a six-wave longitudinal survey of spouses and adult children caring for patients with Alzheimer's disease. Of the four trajectories identified, three represent stable symptom levels over time, with two thirds being repeatedly symptomatic (medium symptom levels), compared to two smaller groups of repeatedly asymptomatic (effectively absent of symptoms) and repeatedly distressed (severe symptoms). Caregivers with few symptoms before bereavement tend to maintain these states afterward, but emotionally distressed caregivers tend to become more distressed. Role overload before bereavement substantially increases the odds of following an unfavorable trajectory afterward, whereas self-esteem and socioemotional support play protective roles. These findings suggest that an intervention during caregiving may facilitate adaptation following death of a loved one (Aneshensel et al., 2004).

The nature of psychiatric symptoms developed as a result of stress exposure most often depends on the individual predisposition, severity and nature of stressors, and duration of exposure. Knowledge concerning the temporal relationships between adverse experiences and the onset of anxiety and depressive

disorders remains sparse. Analyses show clear evidence for the progressive decay in the adverse effects of life events over time. The time to recovery depends on other vulnerability and resilience factors such as coping and personality styles, prior history of depression and anxiety (Surtees & Wainwright, 1999). Developing preventive interventions for mood and anxiety disorders in these high-risk groups should take into account the vulnerability and resilience factors and develop interventions that would boost resilience to stress.

Major and Nonmajor Depression: A Continuum of Vulnerability

Depressive disorders are common in older adults in the form of major and minor depression, as well as transient depressive reactions to stress. Despite lower severity of depressive symptoms, the overall burden from a population perspective is greater for the population with minor depression than with major depression. Minor depression represents a time-limited condition in some patients, whereas for others, it is on continuum with more severe and persistent states. Individuals with minor depression may become "at risk" for chronic or major depression, particularly around adverse life events as bereavement or caregiving. In the absence of intervention studies, clinicians have little to guide their decision about using antidepressants versus psychosocial treatments or using "watchful waiting" strategies in the treatment of minor depression. Psychotherapeutic approaches of age-appropriate psychotherapies (e.g., cognitive–behavioral, interpersonal, or problem solving) used both in major and nonmajor types of depression have been developed in the past decade. In clinical practice, antidepressants are being prescribed for those with significant levels of depression and functional impairment regardless of the *Diagnostic and Statistical Manual of Mental Disorders* (DSM) categorical diagnosis. For individuals with major or nonmajor depression, the question of predicting who are more likely to require active psychotherapeutic or pharmacological intervention is especially important. In our recent studies for caregiver depression, we identified that antidepressant drugs can be helpful in building resilience to stress and depression (Lavretsky et al., 2010), as well as yoga and meditation that can reduce burden and improve coping. Psychotherapeutic and mind–body approaches (e.g., meditation, yoga, Tai Chi can be tried prior to instituting pharmacological therapies (Lavretsky et al., 2011). It would be important to develop preventive interventions in high-risk groups based on the available empirical knowledge of protective factors (e.g., increased social support, resilience training).

Protective Factors for Late-Life Mood Disorders: Got Optimism?

For centuries, folk wisdom has promoted the idea that positive emotions are good for your health. Empirical evidence now provides support for this belief. Robust evidence demonstrates that positive emotions co-occurred with negative

emotions in the stress process (Edwards & Cooper, 1988). About 10 years ago, these possibilities were incorporated into a revision of stress and coping theory. *Coping* can be defined as efforts to prevent or reduce negative impact of stress on individual well-being (Edwards & Cooper). The broaden-and-build theory of positive emotions provides a framework that shows how positive emotions contribute to psychological and physical well-being through more effective coping even during stressful times (Fredrickson, 2001). Lazarus, Kanner, and Folkam (1980) described hope and optimism as sources of successful coping. It is a natural drive to seek personal happiness and fulfillment regardless of age. Successful aging is associated with a positive psychological outlook in later years, general well-being, and happiness (Depp & Jeste, 2006; Peel, McClure, & Bartlett, 2005; Vaillant, 2002). With global trends in population aging, many nations are developing and implementing healthy aging policies to promote quality of life in addition to years of healthy life (Peel et al.). One such approach is implement interventions that would boost resilience to stress in older adults.

A coherent pattern has emerged of individual characteristics associated with resilience and successful adaptation. Salient characteristics include commitment, dynamism, humor in the face of adversity, patience, optimism, faith, and altruism (Lavretsky & Irwin, 2007). There are emotional and cognitive aspects of resilience that can be innate or learned. The innate affective or emotional styles that are likely to influence resilience refer to the individual styles of affect regulation, which is usually a part of personality structure (e.g., optimism or pessimism) or social intelligence. Protective temperamental factors include sociability, intelligence, social competence, internal locus of control, warmth and closeness of affectional ties, and active emotional support within the family network or within religious groups. As such, resilience may represent an important target of treatment and prevention in anxiety, depression, and abnormal stress reactions in aging. The question remains whether resilience can be operationalized for training and taught to older individuals coping with daily stress to boost resilience to stress and life's adversities.

EMOTIONAL AND COGNITIVE RESILIENCE

There are emotional and cognitive aspects of resilience that can be innate or learned. The innate affective or emotional styles that are likely to influence resilience refer to the individual styles of affect regulation, which is usually a part of personality structure (e.g., optimism or pessimism), or *social intelligence*. Individual differences in psychological resilience (the ability to bounce back from negative events by using positive emotions to cope) and positive emotional granularity (the tendency to represent experiences of positive emotion with precision and specificity) are

proposed to play a crucial role in enhancing coping resources in the face of nega-tive events (Tugade, Fredrickson, & Barrett, 2004). *Ego resiliency* has been defined as the capacity to overcome, steer through, and bounce back from adversity (Block & Kremen, 1996). *Ego brittleness* is associated with behavioral problems, depres-sive symptoms, and higher levels of substance abuse (Ong & Beregman, 2010). Resilient individuals tend to draw on positive–emotion-eliciting strategies, such as humor and positive meaning to regulate negative experiences.

Block and Kremen (1996) conceptualized resilience as a subcategory of general intelligence that is responsible for individual competence and self-esteem, and the "social IQ." A considerable body of evidence supports the persistence of general personality structure over time, but some growth can occur with aging, particularly, in introspection and transcendence. The personality implications of "pure intelligence" and "pure ego-resilience" as measured by the Wechsler Adult Intelligence Scale-Revised and by an inventory scale revealed that persons rela-tively high on ego-resilience tend to be more competent and comfortable in the "fuzzier" interpersonal world. Persons defined primarily by raw IQ tend to be effective in the "clearer" world of structured work activities, but also tend to be uneasy in handling human affect and interactions.

The cognitive theory of stress and coping (Folkman, 2008; Lazarus & Folkman, 1984) has always been an appraisal-based model. In its earlier for-mulation, the appraisal process was most heavily implicated during the outset of an event in the evaluation of its personal significance (primary appraisal) and the evaluation of options for coping (secondary appraisal). If an event was con-sidered as a threat or harm, it leads to negative emotions of anxiety and fear. If an event is perceived as a challenge, it can lead to positive emotions such as excitement, eagerness, and confidence that clearly improve coping strategies (Folkman, 2008; Tugade et al., 2004). Positive emotions provide relief from dis-tress, restores resources, and improves coping, whereas negative emotions fuel further distress and maladaptive coping or mental illness (Folkman). However, under continuous stress, resources and coping can fail and lead to the develop-ment of a mental illness with symptoms of depression, anxiety, posttraumatic stress disorder (PTSD), and so forth. Interventions that promote positive emo-tions are beneficial for health (Montpetit, Bergeman, Deboeck, Tiberio, & Boker, 2010). For example, in one study, participants were assigned to one of three groups: (a) "count your blessings," (b) list daily hassles, and (c) control. People who counted their blessings weekly for 10 weeks by listing things that they were grateful for provided evidence for better subjective health outcomes compared to other participants (Tugade et al.).

Older adults manifested significant unidirectional coupling from nega-tive emotion to cognitive performance; younger adults manifested significant

unidirectional coupling from negative emotion to positive emotion and from cognitive performance to both positive and negative emotions. Therefore, cognitive impairment associated with aging may disrupt individual cognitive resilience and increase vulnerability to stress. It remains unclear whether cognitive and emotional resilience predict individual happiness and successful aging.

PHYSIOLOGICAL MECHANISMS OF RESILIENCE TO STRESS AND DEPRESSION IN LATE LIFE

The ability to be happy with life appears to be the central factor in resilience and well-being that leads to biopsychosocial differences in coping (Lyubomirsky, King, & Diener, 2005). Happy people live longer lives, have stronger immune systems, and show greater self-regulation and coping (Lemery-Chalfant, 2010), and some mechanisms are genetically determined. Across adulthood, positive affect is moderately heritable—0.6 in men and 0.59 in women (Lemery-Chalfant). Self-acceptance accounted for much of heritability in men and women. Genetic and nonshared environmental factors are responsible for partial heritability of humor, mental toughness, psychological well-being, and even social support and marital satisfaction. Some candidate genes have been associated with trait resilience. Neuropeptide Y is expressed in regions of the limbic system and regulates diverse functions, including emotional valences to stimuli and memories. Brain-derived neurotrophic factor (BDNF) is a key regulator of the mesolimbic dopamine pathway, which identifies and responds to emotionally salient stimuli. Research has largely focused on the Val66Met SNP (rs6265), with the Met-allele attenuating secretion of BDNF (Egan et al., 2003). The BDNF Val-allele carriers have larger amygdalar, hippocampal, and prefrontal cortical volumes compared to the homozygous Met-allele carriers (Frodl, Möller, & Meisenzahl, 2008), and higher levels of self-reported social support and social interactions (Taylor et al., 2008). A number of other genes have been implicated in attention and affective processing (e.g., tryptophan hydroxylase 2 gene; Reuter et al., 2008) and behavioral resilience to stress exposure.

Physiological aging can modify responsivity to stress because of reduced resilience (Seeman, McEwen, Rowe, & Singer, 2001). Individual differences in the aging process can be conceptualized as an accumulation of wear and tear caused by daily experiences and major life stressors that interact with genetic constitution and predisposing early life experiences (Seeman et al.). The adaptive physiological response to acute stress involves a process, initially referred to as *allostasis* by Sterling and Eyer (Lavretsky & Irwin, 2007) in which the internal milieu varies to meet perceived and anticipated demand. McEwen (2003) extended this definition to include the concept of a set point that changes

because of the process of maintaining homeostasis. The neuroendocrine system, autonomic nervous system, and immune system are mediators of adaptation to challenges of daily life, referred to as allostasis, meaning "maintaining stability through change." Aging process can undermine the process of maintaining homeostasis by invoking changes in the endocrine, autonomic, and immune systems.

Acute stress is known to negatively affect neuroendocrine function via hypothalamic–pituitary–adrenal (HPA) axis. When stimulated, this feedback loop results in the secretion sustained during chronic stress of glucocorticoids such as cortisol enabling the organism to perform with a heightened sense of alertness. The HPA response to stress is a basic adaptive mechanism in mammals. Although an adaptive stress response is essential to survival, sustained elevated levels of glucocorticoids can present a serious health risk including hypertenstion and suppression of anabolic processes, or hippocampal atrophy. Hippocampal volume loss is well documented in normal and pathological aging (Jack et al., 2000). HPA dysregulation has been implicated in several late-life disorders including anxiety (Mantella et al., 2007), major depression, and cognitive impairment and decline (O'Hara et al., 2007). Impaired hippocampal and medial temporal lobe function are implicated in stress-related disorders such as late-life depression and anxiety (O'Hara et al.). McEwen (2003) suggested that circulating catecholamines constitute another key component of allostasis and can have synergistic and oppositional effects on the actions of glucocorticoids and arousal.

Stress-related inflammation have been implicated in late-life depression, anxiety, cognitive decline, and Alzheimer's disease (Reale, Iarlori, Feliciano, & Gambi, 2008). Aging is accompanied by a twofold to fourfold increase in plasma/serum levels of inflammatory mediators such as cytokines and acute phase proteins. In addition, chronic inflammatory processes are implicated in diverse health outcomes associated with aging, such as atherosclerosis, insulin resistance, diabetes, and metabolic syndrome. Furthermore, there is some evidence that aging is associated with a dysregulated cytokine response following stimulation. Consistent with this research, inflammatory mediators are strong predictors of mortality independent of other known risk factors and comorbidity in elderly cohorts. For example, interleukin-6 (IL-6), a proinflammatory factor, whose concentration generally increases in the blood with age, has been linked with Alzheimer disease, osteoporosis, rheumatoid arthritis, cardiovascular disease, and some forms of cancer, and it is prospectively associated with general disability and mortality in large population-based studies (Harris et al., 1999; Kiecolt-Glaser et al., 2003). Anti-inflammatory cytokines IL-4 and IL-10 may actually confer resilience to stress and a protective role for the immune system, involving phagocytosis of dying neurons and processing of beta-amyloid and

microglia that have been implicated in late-life neuropsychiatric disorders. These cytokines may be particularly important in conferring increased resilience to the inflammatory stress response.

Major depressive disorder (MDD) especially in older adults may represent a state of "accelerated aging" because of increased rates of associated mortality and vascular morbidity. Accelerated aging can be assessed by measuring leukocyte telomere length (TL; Wolkowitz et al., 2011). Telomeres are DNA-protein complexes that cap chromosomal ends, protecting the genome from damage. TL may serve as a biological "aging clock," and shortened TL predicts early mortality and several serious medical conditions. Because depression is often associated with increased oxidation and immune activation, these could contribute to accelerated cell aging in depression. These data suggest a novel aspect of depressive pathophysiology that may provide a mechanistic link between MDD and aging processes.

Despite aging-related changes, aging of the adaptive physiological mechanisms do not universally predispose older adults to depression and anxiety, not according to the epidemiological estimates of depression in the community dwelling populations, which indicate that the prevalence of depression is lower in older adults compared to younger adults ranging between 1% and 5%. However, prevalence of geriatric depression is higher among medically ill patients in the medical settings and in the long-term care, and the prevalence on nonmajor depression increases in late life (Lavretsky & Kumar, 2002). Therefore, one might conclude that older adults would be particularly vulnerable to depression under special circumstances of acute medical illness, bereavement, or caregiver stress.

NEURAL CIRCUITRY AND COGNITIVE BIOMARKERS IN DEPRESSION AND RESILIENCE

Aging of the brain, vascular and neurodegenerative changes of important brain structures can diminish adaptive neuroplasticity in presence of severe and chronic stress. These relationships have been examined only in a few studies of older adults. Research into trait biomarkers may shed light into the features that are predictive of late-onset mood disorders. For a biomarker to be valuable as trait biomarker, it has to be present in individuals at risk for the disorder (individuals with family history of depression, caregivers, etc). For instance, some negative affective biases are present before, during, and after late-life depression throughout life cycle (Elliott, Zahn, Deakin, & Anderson, 2011). Such markers may represent altered function in underlying neural mechanisms, which lead to trait vulnerabilities to late-life depression. For example, late-onset depression can be precipitated by worsening of cardio and cerebrovascular disease in individuals

who had enough cognitive and emotional resilience earlier in life, but became more vulnerable to depression only following neural degeneration (Butters et al., 2008). Cognitive biomarkers of executive dysfunction (e.g., planning) and memory impairment may serve as predictors of late-onset mood disorders with associated mild-cognitive impairment (Butters et al.). Negative cognitive biases are altered in daughters of mothers with depression (Joormann, Gilbert, & Gotlib, 2010) indicating it may be a trait biomarker for depression. Vulnerability to depression is also associated with enhanced punishment and reduced reward processing that tends to recruit more limbic subcortical regions such as amygdale and striatum (Elliott et al., 2011; Sahakian & Morein-Zamir, 2011).

Similarly, affective neuroscience provides insight into brain regulation of positive emotions and resilience. Neuronal resilience plays an important role in the pathophysiology of mood disorders caused by impairment in structural plasticity and cellular resilience, which together result in regional reductions in central nervous system (CNS) volume, as well as reductions in the numbers and/or sizes of glia and neurons in discrete brain areas (Lavretsky & Irwin, 2007). White matter integrity is important for normal brain functioning and is disrupted by brain neurodegeneration and microvascular disease.

The brain circuitry that underlies emotion includes several areas of the prefrontal cortex (PFC), the amygdala, hippocampus, anterior cingulate, and related structures. In general, the PFC represents emotion in the absence of immediately present incentives and thus plays a crucial role in the anticipation of future affective consequences of action, as well as in the persistence of emotion following the offset of an elicitor (Davidson, 2000). The amygdala appears to be crucial for learning new stimulus-threat contingencies and also appears to be important in the expression of cue-specific fear. The neurodegenerative changes in amygdale can predispose individuals to vulnerability to late-life anxiety disorders. Individual differences in both tonic activation and phasic reactivity in this circuit play an important role in governing different aspects of anxiety. Asymmetries within the PFC and activation of the amygdala are key components of affective style (Davidson). These differences are related to both behavioral and biological variables associated with affective style and emotion regulation. Plasticity in this circuitry has implications for transforming emotion and cultivating positive affect and resilience (Davidson).

RESILIENT OUTCOMES AND PREVENTIVE INTERVENTIONS

What would constitute resilient outcomes for developing preventive interventions? The absence of disease should be considered an ideal resilient outcome for universal prevention of any disease in general population, as well as in the

populations at risk. In populations with established disease, an example of a resilient outcome would be successful coping with the disease. Finally, secondary and tertiary preventive interventions in those with mood disorders should focus on prevention of relapse and recurrence of mood disorders.

Universal prevention of late-life depression targets the whole population of older people. A good example is a public awareness campaign such as has been launched in many countries in the world. Cuijpers (2003) has described that, even in a disorder like depression, which has quite a high incidence, studies testing the effects of universal prevention in depression are unlikely to be feasible. A way to prepare the public is to teach that depression is a disorder that can be successfully treated, and if left untreated, it can lead to chronic mental and medical illness, and premature mortality. Given the rapid technological advances and the widespread access to electronic media among older people, e-health preventive interventions for older people are being developed. This may shift preventative action toward universal prevention. Although it is feasible to launch universal preventive programs aiming to prevent depression, current methods of research do not allow rigorous testing of their effects.

Selective prevention aims to reach older people who are exposed to known risk factors for depression. Examples are older people with chronic disease, those who have lost their spouse, caregivers, and those who are had a prior history of depression. Several tested interventions are available. They usually involve a way of identifying and engaging those at risk and the intervention proper. The optimal point of contact for selective prevention may be the primary care settings. However, engaging older people who are currently not depressed in an intervention is not easy. Typical interventions involve self-help versions of cognitive therapy, interpersonal therapy, reminiscence, and problem solving. Often, these are modified to cater for people exposed to specific risk factors and circumstances. Other ingredients involve engaging in pleasant activities and physical activity using nutritional supplements. Although these interventions do not target resilience per se, the prevention of disease is an important example of resilient outcomes. Future research should include measures of psychological and cognitive resilience in older adults.

PSYCHOTHERAPEUTIC AND PSYCHOPHARMACOLOGICAL APPROACHES

There has been very little research in using preventive strategies to enhance resilience to stress with psychosocial and psychopharmacological approaches, especially in older adults. There are just a few examples of the cognitive–behavioral treatment (CBT) approach to enhance resilience and well-being in

younger adults. The resiliency training program is a 5-day progressive program that provides experiences for participants to enhance personal resilience and to pursue resilient relationships (Richardson & Waite, 2002). Resilience and resiliency training, an approach that encompasses the complementary and alternative medicine movement, seems to be an important concept and philosophy that can be embraced by allied health professionals. Selected resilient qualities that improve as a result of the intervention include self-esteem, locus of control, purpose in life, and interpersonal relations. Fava, Rafanelli, Cazzaro, Conti, & Grandi (1998) used well-being therapy (a short-term psychotherapeutic strategy) to improve symptoms of anxiety and depression in younger adults that was conducted in a school setting. Well-being therapy is based on a multidimensional model that encompasses environmental mastery, personal growth, purpose in life, autonomy, self-acceptance, and positive relations with others (Fava et al., 1998). It may be applied as a relapse-preventive strategy in the residual phase of affective (mood and anxiety) disorders and as part of cognitive behavioral therapies in patients with affective disorders who have not responded to standard pharmacological and psychotherapeutic treatments (Fava et al.).

Another approach is offered by interventions directed toward mental and physical relaxation and stress reduction (e.g., mind–body interventions) that can help treat or prevent stress-related disorders. Mind–body interventions, such as Tai Chi or meditation, have also been noted to modulate the immune response (Irwin, Olmstead, Oxman, 2007). These interventions interrupt altered immune and endocrine response to stress and negative emotions. First, they modify the way that stressful circumstances are appraised. Relaxation and stress-reduction can change the immune system in accord with reduction in negative emotions. Apart from their stress-reducing functions, these interventions may influence immunity by providing people with increased social contact or teaching them more adaptive coping strategies (Segerstrom, Taylor, Kemeny, & Fahey, 1998).

Physical exercise may be an effective intervention to limit the impact of stress on immunity in chronically stressed older populations. Stress-management interventions attempt to alleviate the immune system disregulation that accompanies psychological stress.

Observations from our recent study of yogic meditation in family caregivers of patients with dementia have shown that meditation for 25–30 minutes can be strikingly beneficial. Overall, study participants report relief in depression, cognition, and an improved coping ability. In addition, improvement in the markers of inflammation and telomerase levels in the meditation group speak to the profound effect of meditative practices on the overall well-being and potentially important antiaging effects (Lavretsky & Irwin, published ACNP abstract). Another recent study by our group demonstrated the ability of weekly Tai Chi

exercise to enhance antidepressant response and cognition, and decrease inflammation in older adults with geriatric depression when added to a standard antidepressant therapy (Lavretsky et al., 2011).

Mindfulness-based approaches to stress reduction may help individuals become more emotionally aware, and have been shown to reduce anxiety and dysphoria in healthy and clinical populations of younger adults. A recently published review of the effect of mindfulness meditation on cellular aging suggests that mindfulness meditation techniques shift cognitive appraisals from threat to challenge, decrease ruminative thought, reduce stress arousal, and directly increase positive arousal states that affect telomerase activity and TL, thereby improving longevity (Epel, Daubenmier, Moskowitz, Folkman, & Blackburn, 2009). Another recently published study documented the effects of intensive meditation training in the participants of the Buddhist retreat on telomerase activity with higher activity postretreat compared to the wait list control. The results implicate a potential effect of meditation on biological aging. The authors suggested that potential mediators of the effect were positive cognition such as perceived control (of life circumstances) versus emotional negativity and neuroticism. Currently, there is only preliminary evidence that the use of mind–body techniques, such as meditation, can be useful in preventing diseases of aging. Future studies should address this potential.

Progress in understanding the neurobiology of resilience and vulnerability to stress-related illnesses will broaden pharmacological treatment approaches. Drugs can target responsiveness to reward, hypervigilance, and dysregulated physiological responses. Selective serotonin reuptake inhibitor (SSRIs) and serotonin–norepinephrine reuptake inhibitors (SNRIs) have also been shown to promote resilience in patients with PTSD and in stressed caregivers (Connor, Sutherland, Tupler, Malik, & Davidson, 1999; Lavretsky et al., 2010). Connor and colleagues (1999) undertook a 12-week placebo-controlled trial of fluoxetine in civilians with PTSD. They found that fluoxetine was superior to placebo in the effects on the total Connor-Davidson Resilience Scale (CD-RISC) that assesses resilience. Resilience building effects have also been seen with venlafaxine extended release. Pooled results from two large multicenter randomized controlled trials of patients with PTSD found that total CD-RISC scores and treatment were significant predictors of both response and remission. Going forward, it would be important to document the effect of the existing treatment modalities on resilience and coping, and also develop more specific treatments that target elements of resilience. Drug trials are under way that test Neuropeptide Y (NPY) enhancers, substance P antagonist, N-methyl-D-Aspartate (NMDA) antagonists, and compounds that downregulate glucocorticoid receptors (Friedman, 2000) that can enhance resilience.

In our randomized placebo-controlled pilot study, 10 mg daily of citalopram improved resilience and decreased levels of depression and distress (Lavretsky et al., 2010). This is the first trial of an antidepressant directed toward increasing resilience in a high-risk group of chronically stressed older caregivers. The published results of our study of complementary use of Tai Chi to augment the treatment response in elderly depressed patients who had a partial response to 10 mg of escitalopram daily demonstrated an overall decrease in distress, improvement in psychological resilience and coping, an improvement in cognition, and inflammatory markers compared to the health education control group.

FUTURE DIRECTIONS

First and foremost, it is important to define and measure resilience reliably. Future research should include reliable and validated measures of biopsychosocial aspects of resilience and associated biomarkers. At this stage of resilience research, social scientists have advanced the field with propositions regarding the key biopsychosocial processes that further recovery and sustainability (Ong & Bergeman, 2010; Ong, Bergeman, & Bisconti, 2004). Reliable measures of core aspects of positive mental health, personal agency, emotional maturity, and subjective well-being (Vaillant, 2003) have provided groundwork for understanding structure of resilience. Resilience can now be quantified by using standardized assessments in neurobiological and treatment studies. Multimodal assessment of the biological determinants of resilience is likely to help identify targets for interventions to enhance resilience on individual and environmental levels. Charney (2004) and Curtis and Cicchetti (2003) have reviewed potential neurohormonal and genetic processes that may yield physiological markers of resilience. Greater specificity in reliable measurements is increasingly available across the levels of inquiry. Prospective determinants of resilience for future investigations include neuroendocrine, immunological, neural circuitry, genetic, temperamental, and environmental influences. More research is needed to make the connection from these biomarkers to improving resilient treatment outcomes.

The most efficient use of cognitive biomarkers would be to catch vulnerability and protect individuals from succumbing to disorders in the first place (Sahakian, Malloch, & Kennard, 2010) by promoting resilience (Beddington et al., 2008; Elliott, Sahakian, & Charney, 2008). It may therefore be possible to preemptively use, for example, psychological or pharmacological interventions to boost these positive biases in young, healthy individuals at risk for developing late-life depression. This would greatly enhance well-being and mental capital throughout the life course (Beddington et al.), but especially in the prevalent, yet the oft overlooked, instance of late-life depression (Lebowitz et al., 1997).

Developing approaches for enhancing psychological resilience as a way of preventing or treating late-life mood disorders may help overcome health problems and resulting disability and mortality in older adults. Several psychotherapeutic approaches already demonstrated promise in building resilience, such as positive affect skill building in individuals with depression (Fava et al., 1998; Seligman, Rashid, & Parks, 2006). Other approaches with documented success in building positive attitude and emotions include gratitude, mindfulness, positive reappraisal, focus on personal strength and attainable goals, altruism, and volunteerism, all which use cognitive reframing of the given individual circumstances. Learning to enhance psychological resilience may help overcome health problems and disability. Successful stress reduction and management, particularly in the most vulnerable elderly, can prevent serious mental and physical illness. Integrated modalities to improve resilience and reduce stress in combination with pharmacotherapy and lifestyle changes are likely to improve the overall functioning and well-being of older adults.

Technologies related to health care such as telehealth, electronic medical records, and telehome care can support independence and psychological resilience and safety and behavioral monitoring. Medical applications such as cell phones, the Wii, Facebook, and Twitter have the potential to enhance and support social resilience. Self-help communities can be created online and promote resilience via virtual support groups.

Stress resilience reflects an individual's capacity for successful adaptation in the face of acute stress, trauma, or more chronic forms of adversity. Resilience is an active process—not just the absence of pathology that can be promoted by enhancing protective factors. Novel interventions may become possible with increased understanding of psychological predictors of resilience and the associated underlying genetic, neural, and neurochemical influences that shape psychological strength. Neuroimaging and other biomarkers studies can examine whether treatment-related changes in neural functioning can also reduce the likelihood of developing psychopathology in response to future stressors. Progress in understanding the neurobiological underpinnings of resilience and vulnerability to stress-related illnesses will also broaden pharmacological treatment approaches. Drug trials can target responsiveness to reward and dysregulated physiological responses.

Future research should concentrate on discerning the specific psychological and biological mechanisms that underlie the age-related changes in emotion regulation. Longitudinal studies are needed to better understand the dynamics between the trajectories of emotional resilience and emotional growth, and mature coping styles that engage mature defense mechanisms (i.e., suppression,

anticipation, sublimation, humor, and altruism) in promoting successful positive aging. Culturally sensitive interventions can be developed to reflect the needs of aging ethnic groups in their cultural context.

New preventive interventions can focus on an individual at risk or interventions on environment. At the center of many communities is the physical capacity of housing, transportation, energy sources, sustainable environment, and land use that can help support resilient communities. Therefore, interventions on the community level can be entertained to address sustainability of quality of life and interconnectedness between environmental and individual resilience. Investment in the infrastructure such as affordable housing, home internet access, access to health care, public parks and senior centers, air quality, social programs addressing acculturation, and adaptation of immigrant groups would definitely increase community and individual resilience.

CONCLUSION

Research on resilience has shifted the focus of psychological investigation and inquiry by increasing the positive rather than reducing the negative in healthy aging. A coherent pattern of characteristics associated with successful adaptation is emerging. These include sound intellectual functioning, the ability to cope with emotions, self-esteem, optimism, altruism, humor, and an engaged and active coping style in the face of adversity.

The research on resilience has achieved a certain level of maturity. Resilience can be quantified by using standardized assessments in neurobiological and treatment studies. Multimodal assessment of the biological determinants of resilience will help identify targets for intervention to enhance resilience on individual and community levels. Prospective determinants of resilience for future investigations include neuroendocrine, immunological, neural circuitry, genetic, temperamental, and environmental influences. The field of resilience research is on the verge of becoming relevant for dissemination of knowledge about risk and protective factors for late-life mood disorders and testing and implementing new preventive interventions in research and in the community care.

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CHAPTER 4

Psychological Resilience in Adulthood and Later Life:

Implications for Health

Carol D. Ryff, Elliot M. Friedman, Jennifer A. Morozink, and Vera Tsenkova

ABSTRACT

We define *psychological resilience* as the capacity to maintain, or regain, psychological well-being in the face of challenge. Elaborating on this definition, multiple dimensions of well-being are delineated and linked to the concept of resilience. We then illustrate the perspective with prior research on various challenges, including chronic experiences (e.g., caregiving) and acute events (e.g., relocation) of later life as well as disadvantaged socioeconomic status. Cumulative, life history approaches to resilience are examined with both quantitative and qualitative sources of data. The latter half of the chapter examines the links between psychological resilience and health drawing on recent findings, which demonstrate that higher well-being is predictive of better regulation of multiple biological systems, including in contexts of adversity. Given the protective influences of well-being, we summarize research intervention work designed to promote well-being among those suffering from psychological disorders. We conclude with directions for future research focused on the need to explicate diversity in human strengths as individuals confront adversity as well as the need to attend to the inherent interplay of positive and negative factors in understanding human resilience.

Understanding why some are able to function effectively in the face of adversity is a worthy scientific pursuit. Knowledge generated from such inquiry is fundamental to the development of effective prevention and health promotion strategies. We approach the topic of resilience from a psychological perspective and ask what implications it has for physical health. The first section offers a working definition of psychological resilience with emphasis on distinct components of well-being. Results from our prior studies of well-being vis-à-vis diverse life challenges are then described. Focusing on more recent work, we shift to how psychological resilience might influence health via intervening biological- and brain-based mechanisms. Given emerging evidence that resilience is beneficial for health, a critical question is whether it can be promoted among ever-larger segments of the population. We argue that it can, drawing on findings from clinical interventions and educational programs. We conclude with needed future directions to understand and promote psychological resilience.

DEFINING PSYCHOLOGICAL RESILIENCE

We know vastly more about human illness, dysfunction, and disease than about what it means to be healthy and well, including in contexts of significant life challenge. Nonetheless, the field of aging is unique for its long-standing interest in positive functioning, exemplified by decades of interest in successful aging (see Friedman & Ryff, in press-a). Resilience brings new directions to that tradition of work in that it requires a focus not only on the maintenance of capacities with aging, but also on recognition of the challenges confronted along the way. In this regard, we define *psychological resilience* as the capacity to maintain, or regain, psychological well-being in the face of challenge. The definition underscores wellness in the face of adversity—that is, the capacity to flourish, develop, and function effectively despite difficult circumstances or events.

The definition requires an explicit theoretical and empirical formulation of psychological well-being. Drawing on multiple literatures, including conceptions of ego development (Erikson), individuation (Jung), self-actualization (Maslow), maturity (Allport), meaning and life purpose (Frankl), the fully functioning person (Rogers), and positive mental health criteria (Jahoda), Ryff (1989) put forth six key dimensions of what constitutes well-being. These include *autonomy* (capacity for self-determination), *environmental mastery* (ability to manage one's surrounding world), *personal growth* (realization of potential), *positive relations with others* (high-quality relationships), *purpose in life* (meaning and direction in life), and *self-acceptance* (positive self-regard). Structured self-report procedures

were constructed to assess these six key dimensions. They have served as empirical indicators of who is able to function positively vis-à-vis various life challenges, that is, who is resilient. Other formulations of well-being deal with hedonic aspects, such as positive affect and life satisfaction (see Ryan & Deci, 2001, for a review). These are also included in some of our illustrative studies on succeeding texts.

Each of the aforementioned components constitutes human strengths that are important in the encounter with life difficulties and may be honed by adversity (see Ryff & Singer, 2003b). For example, self-acceptance is not about narcissistic self-love or superficial self-esteem, but involves a deep form of self-regard built on awareness of one's positive and negative attributes as well as coming to peace with both the triumphs and disappointments of one's life. Purpose in life involves the capacity to finding meaning and direction in one's life, *especially* in confrontations with life challenges. Meaning, as articulated by Frankl (1992), in fact, comes from the struggle with trial and tribulation. Similarly, personal growth is about the continual realization of one's talent and potential. Paradoxically, the development of new resources and strengths often occurs when individuals are confronted with adversity and even trauma. Environmental mastery pertains to proactive management of one's surroundings vis-à-vis the challenges of work and family life in middle adulthood as well as the challenges of aging in the later years. Autonomy addresses the capacity to march to one's own drummer, even when personal convictions may go against conventional beliefs; so doing underscores having the courage of one's own convictions. Positive relations with others involve having close connections, intimacy, and abiding love with others. Maintaining such relational ties typically involves resolution of difficulties about problematic issues. Thus, all aspects of well-being in the preceding formulation represent strengths that require active engagement with life, including its slings and arrows.

The life challenges we have investigated empirically have been wide ranging and include normative, expected transitions, such as becoming a parent, or community relocation in later life, as well as unexpected, unplanned events, such as having a child with mental retardation. Chronic difficulties, such as later life caregiving or living with an alcoholic have also been examined. Drawing on the growing literature on social inequalities, we have investigated the maintenance of well-being in the face of educational and economic disadvantage as well as minority group status. Many such inquiries have been carried with longitudinal studies, thereby allowing for assessments of change in well-being across time. The following section briefly reviews what has been learned about those who are, or are not, able to maintain high well-being in the face of these differing life challenges.

ILLUSTRATIVE PRIOR STUDIES: WELL-BEING
VIS-À-VIS CHALLENGE

As emphasized earlier, life challenge is fundamental to our conception of resilience. The guiding model therefore is not about lives of smooth sailing where all goes well and one manages to evade adversity, but rather about successful engagement with difficult life events and experiences. Old age, in particular, is replete with challenges, which include acute health events, loss events (retirement, widowhood), chronic stress (caregiving), and required transitions (relocation). As such, later life is uniquely valuable for understanding how challenge is successfully negotiated. Central to our studies is the tracking of individuals over the course of these naturally occurring challenges and sometimes focusing on how they combine and accumulate over time.

Chronic and Acute Challenges of Aging

Aging brings increased health challenges (chronic conditions, symptoms) for most individuals, but many are able to maintain high levels of psychological well-being despite such changes. How do they do so? Our studies have shown that those who are able to do so make effective use of social comparison processes (Heidrich & Ryff, 1993b)—that is, they know when to compare themselves with others who are doing better (upward comparisons with role models of positive aging) as well as those who are doing poorly (downward comparisons that heighten awareness of one's own strengths) so as to benefit overall well-being. Similarly, well-being is enhanced among older adults who are socially integrated (Heidrich & Ryff, 1993a), defined in terms of having meaningful roles, known reference groups, and clear normative guidelines for behavior.

Compared to growing health challenges of aging, community relocation in later life constitutes a discrete transition. For most elders, it involves a move from one's personal home to an apartment or retirement community. Relocation at any age is stressful, but in old age, it may also signal a loss of independence and, thus, be a move that is not embraced and may even be resisted. Our work on relocation among aging women, however, has shown that many fare well in the transition and even show gains in well-being from before to after the move. Psychological strategies are again relevant, such as the capacity to have a flexible self-concept, which allows one to downplay areas wherein one is doing poorly, while also elevate life domains in which one is doing well (Kling, Ryff, & Essex, 1997). Engaging in positive social comparisons as well as positive reflected appraisals (perceiving that one is viewed favorably by significant others) also benefits psychological well-being following relocation (Kwan, Love, Ryff, & Essex, 2003).

We have contrasted the discrete challenges of community relocation with the challenges of life-long caregiving, related to being the parent of an adult child with mental retardation (Kling, Seltzer, & Ryff, 1997). The former is a more normative experience, in the sense that it is fairly common and may be anticipated. Parenting a child with developmental disabilities, in contrast, is nonnormative, in that it is atypical, unplanned, and long-term in duration. We examined cross-time changes in psychological well-being in both contexts. As predicted, more positive well-being profiles were evident among aging women going through community relocation, the normative transition, compared to managing the nonnormative responsibilities of life-long caregiving for a child with developmental disabilities. Further, those relocating were found to use more problem-focused coping strategies than the caregiving mothers, although the relationship between coping strategies and well-being were more strongly evident among those engaged in long-term caregiving. Thus, well-being was found to be more compromised by the nonnormative life challenge, but it was among such individuals that coping strategies were more strongly tied to well-being outcomes.

Challenges of Inequality and Cumulative Profiles of Adversity

Apart from proximal life experiences, other challenges emanate from individuals' location in the social structure. In this area, we have examined how one's position in the socioeconomic hierarchy, such as living with persistent educational or economic disadvantage, is linked to psychological well-being (Marmot, Ryff, Bumpass, Shipley, & Marks, 1997). On average, disadvantaged socioeconomic status (SES) is negatively associated with well-being, although there is wide variability within socioeconomic groups. Our more recent work shows this variation with SES groups to be consequential for biological risk factors (see Morozink, Friedman, Coe, & Ryff, 2010, which is elaborated in the following sections). We likewise investigated minority group status in another study and found, unexpectedly, that it was a *positive* predictor of most aspects of well-being (Ryff, Keyes, & Hughes, 2003) compared to majority group status. These results possibly reflected the idea of psychological strengths being honed in the face of race-related adversity. Nonetheless, perceptions of discrimination, particularly among women (majority and minority), were found to be significant negative predictors of well-being.

As lives are lived through time, individuals must contend with multiple unfolding challenges. Life history approaches are therefore needed to achieve a more comprehensive understanding of resilience. We adopted such a life history approach to illuminate the lives of women who experienced major depression at some point in adulthood, but subsequently regained high levels of well-being (Singer, Ryff, Carr, & Magee, 1998). Using longitudinal data from childhood

through midlife, we focused on cumulative profiles of adversity and advantage. Multiple life pathways were identified to account for the experience of major depression and recovery from it. For example, some women experienced adverse events in early life (e.g., parental alcoholism, death of parent, limited parental income or education), but these difficult beginnings were accompanied by later experiences of advantage (e.g., upward occupational mobility, close ties to a spouse). Other women experienced major adversity in their adult lives (e.g., unemployment, single parenting, spousal drinking, caregiving responsibilities), but such challenges were offset by good starting resources (e.g., high-level abilities in school, adequate parental income and education). Despite notable variation across these lives, our analyses distilled a limited number of prominent pathways of resilience among women who regained high well-being following an episode of depression.

Qualitative Approaches to Resilience

The preceding studies use quantitative sources of data. A further way of enriching our understanding of human resilience involves use of qualitative data, as may be obtained in biographical studies. Such open-ended, unstructured, highly individualized accounts provide valuable insights as to how individuals make sense of their life difficulties and what they construe as key protective factors helping them to prevail. One such example pertains to the life of Mark Mathabane (1986), whom we examined in the context of racial disparities in health (Singer & Ryff, 1997). Mathabane spent the first 18 years of his life living under the apartheid regime in South Africa. His biography recounted early experiences of overwhelming degradation and difficulty, including having his parents subjected to late-night police raids, during which his father was humiliated and arrested. Other recollections pertained to searching for food in garbage dumps, the pain of malnutrition, and the violence of street gangs. Nonetheless, Mark Mathabane had the sustained benefit of an astonishingly hopeful, yet strict mother as well as a supportive grandmother. Both held unwavering commitments to education. School and athletic competition (tennis) ultimately served as his passport to freedom so that later he could write their story. The core of his resilience, Mathabane attributed to his mother's impassioned urge to keep fighting and to never succumb to poverty, fear, pain, or suffering. She instilled in him a conviction that power comes from transforming negative experience into the motivation to prevail in the face of staggering obstacles.

Moving from compelling single-case examples back to group-level research is difficult, although the richness of individual experience can be incorporated into quantitative research via the inclusion of qualitative, open-ended questions. This strategy was taken to probe the inner experience of a group of individuals designated as resilient by virtue of their having high psychological well-being

on the previously described quantitative scales, despite having low educational attainment (Markus, Ryff, Curhan, & Palmersheim, 2004). Our goal was to learn how such individuals explained their own well-being via responses to such questions as "What does it mean to you to have a good life?" or "What are some of the reasons your life has gone well?" or "What are your hopes for the future?" Compared with college-educated adults, whose answers underscored their own agency—that is, ways in which they influence, choose, plan, change, and are in control of their lives, high school–educated adults were less likely to focus on personal accomplishments and their own skills and abilities. Instead, they emphasized their families and communities, along with strong value commitments to uphold one's responsibilities to others, even in the face of unavoidable difficulties.

Taken together, the preceding studies illustrate multiple angles on *resilience*, defined as the capacity to maintain or regain psychological well-being in the face of adversity. The challenges described differed on numerous dimensions—proximal events and transitions versus distal influences linked to one's standing in the social hierarchy; normative, anticipated events versus nonnormative, unexpected challenges; discrete and short-term events in childhood, midlife, or old age versus long-term, chronic experience enduring over decades; and cumulative profiles of adversity versus advantage. Across this spectrum, the recurrent theme was that some individuals manage to show high well-being in the face of challenge, whereas others do not. Factors invoked to account for these favorable outcomes ranged from psychosocial strategies (social comparisons, reflected appraisals, coping styles) to receiving nurturing support from significant others, and one's persistence and personal abilities. These studies did not yet ask whether such profiles of resilience were good for health. Such investigations constitute our more recent work on the topic of human resilience, which is examined in the following section.

RECENT STUDIES: RESILIENCE, BIOLOGY, AND HEALTH
Going Beyond Psychology

Why the extension to health, and in particular, to intervening biological mechanisms that may underlie resilience? A first answer is that restricting the earlier research exclusively to psychological factors, be they dimensions of well-being that define positive functioning, or psychological strategies thought to promote it, creates boundary problems. That is, where well-being ends and protective factors begin is complicated, given that operationalizations of guiding constructs may be blurred, despite well-intentioned efforts to articulate theoretical frameworks and develop valid and reliable assessment tools. Stated otherwise, explaining

psychological resilience by drawing on other psychological resources runs the risk of being vexingly insular.

The second, more compelling response for moving to biology and health is that so doing helps elevates subjective experience, particularly of the positive variety, to a realm that should be taken seriously as *something that matters*. That is, if people's phenomenological experiences about themselves and their lives can be shown to be linked in systematic ways to biological processes implicated in morbidity and mortality, then subjectivity becomes potentially as important as the causes of cancer or heart disease. Indeed, personal evaluations of how well one is doing in life become critical factors in understanding how disease and disability come about, or more precisely, how they might be avoided.

The third reason for linking resilience, defined as *psychological well-being* in the face of adversity, to biology and health is that it helps right the massive ship of scientific research funded by the National Institutes of Health (NIH). Although it was asserted more than 60 years ago by the World Health Organization (1948) that human health must be seen as *more than the absence of illness*, most of what is studied, or treated, under the rubric of health remains overwhelmingly focused on the negative (i.e., dysfunction, disability, disease). The central advantage of having well-conceptualized, empirically tractable indicators of human flourishing, illustrated by multiple aspects of well-being, is that they allow for mapping the physiological substrates of positive experience, which in turn, affords windows on human health as *health* rather than illness or disease (Ryff & Singer, 1998). Resilience ups the ante on this endeavor by bringing challenge into the formulation. On succeeding texts, we put forth two lines of work for understanding how well-being is linked to health. The first argues that positive psychological functioning is health-protective in general, and the second argues that well-being provides a buffer for health in the confrontation with challenge or adversity.

Proposition #1: Well-Being Predicts Better Biological Regulation

Initial efforts to link psychological well-being to biological factors addressed the simple question of whether higher levels of such factors as purpose in life, environmental mastery, and positive relations with others would predict lower levels of biological risk, such as decreased stress hormones and cardiovascular risk factors. Data from an initial sample of older women (Ryff, Singer, & Love, 2004) showed that those with higher levels of purpose in life, personal growth, and positive relations, in fact, showed lower cardiovascular risk (lower glycosylated hemoglobin, lower weight, lower waist–hip ratios, and higher "good" cholesterol (high-density lipoprotein [HDL]) as well as better neuroendocrine regulation (i.e., lower salivary cortisol throughout the day). Higher profiles on positive relations with others and purpose in life were also linked with lower inflammatory

factors—interleukin-6 (IL-6) and its soluble receptor (sIL-6r; Friedman, Hayney, Love, Singer, & Ryff, 2007).

In another sample of midlife adults, aspects of well-being were linked with salubrious brain activation patterns. Specifically, greater left (than right) prefrontal activation as associated with higher levels of multiple aspects of well-being, even after adjusting for positive affect and life satisfaction (Urry et al., 2004). This specific brain activation pattern has been linked to better health outcomes, including increased antibody response to flu vaccine (Rosenkranz et al., 2003). Using functional magnetic resonance imaging techniques, van Reekum et al. (2007) found that those with higher eudaimonic well-being showed better regulation of subcortical emotion centers (amygdala) by higher cortical brain regions (anterior cingulate cortex). Such individuals also showed reduced emotional responses to negative stimuli.

We note that the preceding findings coexist with a growing body of research documenting that higher hedonic well-being (happiness, positive affect, life satisfaction) is linked with lower morbidity, decreased health symptoms and pain, and increased longevity (Pressman & Cohen, 2005), resistance to illness (Cohen, Alper, Doyle, Treanor, & Turner, 2006), decreased stroke incidence (Ostir, Raji, Ottenbacher, Markides, & Goodwin, 2003), and better glycemic control (Feldman & Steptoe, 2003; Tsenkova, Love, Singer, & Ryff, 2008). Happiness over the workday has also been linked with lower blood pressure, lower heart rate, and reduced fibrinogen stress response (Steptoe & Wardle, 2005) as well as lower salivary cortisol and a reduced blood pressure response to laboratory stress (Steptoe, Gibson, Hamer, & Wardle, 2007).

Taken together, these studies document the biological and neurological underpinnings of positive psychological experience and, in some instances, show such patterns while controlling for negative affect; thus, helping to establish that the presence of the positive is more than the absence of the negative. The general direction of effect links subjectively experienced well-being to the maintenance of biological systems in normally functioning zones, although much remains unknown about the pervasiveness of these effects and on how they come about. The role of these linkages in preventing the emergence of disease processes remains largely uncharted territory.

Proposition #2: Well-Being as Protective in the Face of Adversity

Studying the individual under conditions of challenge is the more demanding test of whether experienced well-being is biologically protective. Moreover, such inquiry epitomizes the phenomenon of resilience by bringing into high relief the interplay of well-being, biology, and health under conditions of adversity. We note that in laboratory studies, often with animal models, mechanisms of resilience at

biological levels have been elaborated in terms of neurochemical response patterns to acute stress (Charney, 2004). Similarly, physiological "toughness" has been formulated in terms of a sympathetic nervous system arousal response, which combines strong, challenge-induced sympathetic nervous system activity with resistance to brain catecholamine depletion and suppression of pituitary adrenal–cortical responses (Dienstbier, 1989). Human research to date has less mechanistic detail, although it affords the singular advantage of being conducted with naturalistic, real-world challenges—that is, the actual life difficulties confronted by individuals as they move across the decades of adult life.

As described earlier in our initial studies of resilience, we have investigated the challenges of social inequality. Prior health research has repeatedly documented that lower socioeconomic standing contributes to greater risk of illness, disease, and disability, along with earlier mortality (Adler, Marmot, McEwen, & Stewart, 1999; Adler & Rehkopf, 2008; Alwin & Wray, 2005; Kawachi, Kennedy, & Wilkinson, 1999; Matthews & Gallo, 2011). Progress is being made in identifying the biological pathways through which these effects occur, including heightened cardiovascular risk, elevated neuroendocrine activity, and increased inflammatory processes (e.g., Friedman & Herd, 2010; Karlamangla et al., 2005; Lupien, King, Meaney, & McEwen, 2001; Steptoe, Owen, Kunz-Ebrecht, & Mohamed-Ali, 2002). Limited work, however, has addressed variability within socioeconomic groups—that is, the extent to which some at the low end of the SES hierarchy manage to evade adverse health outcomes.

We have approached this question with a focus on psychological well-being as a potential moderating factor that may offset, or protect against, ill health outcomes among educationally or economically disadvantaged individuals. One longitudinal investigation (Tsenkova, Love, Singer, & Ryff, 2007) based on a community sample of aging women found, as predicted, that those with higher levels of income had better glycemic control, measured in terms of glycosylated hemoglobin (HbAlc). The effect was moderated by reported levels of well-being (purpose in life, personal growth, positive affect), but the direction of the interaction revealed an exacerbation of biological risk via the lack of well-being. That is, those with low levels of income had worse glycemic control when they also reported compromised levels of well-being.

Recent findings from a national sample of American adults, known as *Midlife in the United States* (MIDUS), document the hypothesized protective effects, albeit with a different biological factor, namely the inflammatory marker IL-6 (Morozink et al., 2010). Consistent with previous research, the first finding was that those with lower levels of education had higher levels of this inflammatory marker, net of numerous confounds (health behaviors, body mass index, chronic illnesses). However, reported well-being moderated this effect, such that

those with higher levels of environmental mastery, positive relations with others, purpose in life, self-acceptance, and positive affect showed less elevated levels of IL-6 compared to their same education peers who did not report higher levels of well-being. In fact, these individuals with only a high school education or less had IL-6 levels comparable to college-educated adults, thus underscoring that the maintenance of high levels of well-being in the face of socioeconomic adversity is linked with better inflammatory profiles. Our discussion of the findings emphasized the need to expand the analyses to include possible mediating processes, such as better health behaviors (diet, exercise, weight) and better glucocorticoid regulation.

An earlier study, also focused on the prediction of IL-6, had shown further evidence of compensatory processes at work (Friedman et al., 2005). Based on the aging women sample, those with the most elevated levels of IL-6 had both compromised well-being, measured in terms of positive relations with others, as well poorer health behaviors, measured objectively in terms of sleep efficiency. However, interaction patterns revealed that good social relationships compensated for the adverse effects of poor sleep efficiency, and similarly that good sleep compensated for having poorer quality social relations, thus suggesting multiple causal pathways. Thus, although not focused on the challenges of socioeconomic disadvantage, this study underscored the protective effects of interpersonal well-being vis-à-vis aging sleep problems or good sleep efficiency vis-à-vis social relational difficulties. In the same longitudinal sample of aging women, Phelan, Love, Ryff, Brown, and Heidrich (2010) found two distinct cross-time patterns of sleep, measured in terms of the Pittsburgh Sleep Quality Index (PSQI; Buysse, Reynolds, Monk, Berman, & Kupfer, 1989): good but declining sleep quality over time and disrupted sleep quality over time. Higher psychological well-being (positive relations with others, environmental mastery, personal growth, purpose in life, self-acceptance), along with fewer illnesses and lower depression at baseline predicted reduced odds for membership in the disrupted sleep group.

One of the central challenges of aging is managing to maintain functional capacities, despite the accumulation of chronic conditions. Medical comorbidity characterizes most adults more than the age of 65 years (Friedman & Ryff, in press-a). Such normative health change also contributes to increased biological risk for subsequent morbidity and mortality. Using the MIDUS sample, we found that those with increased profiles of chronic conditions had higher levels of IL-6 and C-reactive protein (CRP; Friedman & Ryff, in press-b), but importantly these effects were moderated by reported levels of purpose in life and positive relations with others. That is, despite increased burden of disease, those with higher levels of life purpose and quality ties to others showed reduced increments in inflammatory markers compared to those with higher chronic conditions and low well-being.

Continuing with the challenges of aging, we conclude this section with findings from other investigators working with the Rush Memory and Aging Project, a longitudinal study of community-based adults in and around Chicago. Three studies from this investigation have underscored the protective influence of having a high level of purpose in life. Controlling for various confounds and including a prospective design, those with high purpose in life showed a significantly reduced risk of mortality 5 years later (Boyle, Barnes, Buchman, & Bennett, 2009) compared to those with lower levels of life purpose. Two subsequent studies reported that those with high levels of life purpose were half as likely to develop disability over a 6-year follow-up (Boyle, Buchman, & Bennett, 2010) and 2.5 times less likely to develop Alzheimer's disease over a 7-year follow-up compared with those having low levels of life purpose (Boyle, Buchman, Barnes, & Bennett, 2010).

Taken together, the previous summary of studies offer growing empirical evidence that psychological well-being affords protection against the health challenges that accompany aging as well as those that accompany social inequality. Findings vary with regard to which aspects of well-being convey such protective benefits, although the most consistent patterns have been observed for existential well-being (purpose in life) and interpersonal well-being (positive relations with others). The protective benefits obtained sometimes pertain to biological markers (cardiovascular risk factors, inflammatory processes) and in other cases to actual disease outcomes (Alzheimer's, mortality). In several instances, the obtained evidence has been based on longitudinal inquiry, thereby sharpening causal interpretations, and routinely, these studies have included extensive variables to control for confounding factors. Given the overall pattern of supportive evidence, it is relevant to ask whether well-being can be promoted. That is, can interventions be created that allow ever greater numbers of individuals to experience positive self-regard, good quality ties to others, and the sense that their lives are manageable, meaningful, and involve realization of personal potential.

PROMOTING WELL-BEING, NURTURING RESILIENCE

We have emphasized that the presence of well-being not only constitutes a desired phenomenological condition; it appears to be good for biological regulation and health, via brain and biochemical processes. Whether more individuals can participate in this salubrious interplay has been addressed by clinicians treating such disorders as depression and anxiety. "Well-being therapy," developed by Fava and colleagues (Fava, 1999; Fava, Rafanelli, Grandi, Conti, & Belluardo, 1998; Fava et al., 2005) is one such treatment. It is an intervention provided in combination with cognitive behavioral therapy and has been shown to prevent relapse over periods of 2 to 6 years. Fava and Ruini (2003) describe key components of the treatment, which

is based on Ryff's (1989) multidimensional model of psychological well-being. The goal of therapy is to improve patients' experiences of well-being in hopes of preventing relapse during the residual phase of mood and anxiety disorders—when major debilitating symptoms have subsided—but the patient remains at risk for falling back into the depressed or anxious condition. It is a short-term therapeutic strategy (8 weeks) that involves the use of structured diaries. Clients are required to record positive experiences from their daily lives, however fleeting. The focus in therapy sessions is on helping clients sustain such experiences rather than prematurely interrupt or curtail them by maladaptive cognitions. The fundamental idea behind the therapy is that recovery from mood and anxiety disorders requires the capacity to experience well-being (Fava, Ruini, & Belaise, 2007). Thus, eliminating symptoms of distress is, in and of itself, insufficient to achieve full recovery—one must also be able to participate in positive psychological experience.

Given the success of well-being therapy in preventing relapse of psychological disorders, it is now being adapted for use in preventive contexts as well. Ruini, Belaise, Brombin, Caffo, and Fava (2006), for example, have developed an intervention protocol, derived from the therapy that is used with students in school settings. Pilot research has shown that the intervention resulted in a reduction of psychological symptoms and an increase in psychological well-being. Adapting the strategy for other contexts and other age groups, including older adults in the community, seems a worthwhile endeavor. To the extent that individuals can cultivate skills for seeing and savoring the positive in their lives, much in the same way that people can learn to practice good nutrition, they would have tools at their disposal to draw on in times of distress or adversity. The prior literature on resilience, in both childhood (e.g., Luthar, Cicchetti, & Becker, 2000; Masten, 1999) and adulthood (Klohnen, 1996; Reich, Zautra, & Hall, 2010; Ryff & Singer, 2003a; Staudinger, Marsiske, & Baltes, 1995), underscores the presence of certain protective factors, such as personality attributes, intellectual abilities, and social supports—many of which are discussed in other chapters in this volume. We have emphasized the importance of the subjective experience of multiple aspects of psychological well-being. Although some individuals tend to naturally possess these attributes and strengths, the prior intervention work suggests such resources can be cultivated, even among those who do not have natural tendencies to experience high well-being.

SUMMARY AND FUTURE DIRECTIONS

Our objective in this chapter has been to advance a formulation of resilience that involves the capacity to maintain or regain psychological well-being in the face of adversity. This is not the only way to conceptualize resilience, a uniquely rich

idea that has been probed with various formulations (see Zautra, Hall, & Murray, 2010). Guided by our chosen definition, we summarized findings from multiple investigations that were built around diverse types of challenge and focused on evidence of those who, indeed, evidenced high well-being in the confrontation with adversity. Our more recent studies extended this work to investigate whether it is beneficial for health by focusing on the neurological and biological concomitants of well-being as well as links to unfolding profiles of morbidity and mortality.

Much remains to be done to advance knowledge of human resilience, particularly as individuals grow old. The last decade of research reveals tremendous strides forward in generating theory-guided formulations of psychological and social resources and making them empirically tractable so that hypothesized benefits could be rigorously investigated. Although growing evidence documents the health benefits of positive psychosocial experience, along with increased specificity of neurobiological pathways, there is need to pursue more complex approaches that put different combinations of psychological characteristics together with their unfolding consequences for biology and health. Stated otherwise, the people we have studied to enrich our understanding of human strengths in the face of life's vicissitudes demonstrate enormous variety and undeniable uniqueness. As scientific endeavors strive to find common themes amidst such complexity, each advance comes with multiple layers of needed refinement.

For example, while positive functioning vis-à-vis challenge is an increasingly demonstrated empirical reality, even our own limited studies make clear that its form and shape is not uniform across people. There are multiple ways to be well in the face of adversity, and different people illustrate diverse combinations of strengths; some, for example, reflect more interpersonal connections, whereas others reveal greater intrapersonal resources (meaning, purpose, growth). To date, most research glosses over these variants, in part, because analyses tend to be based on variables taken one at a time rather than persons who are composites of many different characteristics. Thus, a worthy direction for future research is to enrich understanding of how different aspects of well-being, ensuing from diverse eudaimonic and hedonic formulations, come together in individual lives. Person-centered approaches (see Ryff, 2008) may be valuable for extracting such a more comprehensive and differentiated understanding of the overall picture of strengths in the face of challenge.

Similarly, because much prior health research has been focused on the negative—disease, disability, dysfunction, and related psychosocial vulnerabilities—efforts to create positive counterpoints run the risk of being exclusively focused on what is healthy, adaptive, and conducive to flourishing. Initial strides to give serious scientific attention to salubrious functioning required

documenting that the story was not just the "flip side" of the negative—that is, its unique effects on biology and health had to be demonstrated after adjusting for the negative. So doing served useful purposes, but has unfortunately kept the downsides and upsides of the human condition bifurcated rather than put together and integrated. Resilience research helps alleviate this problem by its dual emphasis on well-being vis-à-vis life adversity.

Additional work is needed, however, to capture the "complexities of valence" that define individual lives, such as the capacity to find happiness in a difficult and sometimes hostile world (Shmotkin, 2005). Moreover, psychological strengths themselves may co-occur with psychological vulnerabilities— purposeful lives often entail daunting pursuits and sometimes debilitating failure; rich human connections invariably involve warmth and love along with experiences of conflict and pain; personal growth and self-realization may be accompanied by angry resentments about unfair treatment along the way. As recognized by William James (1902/1958), not every soul comes with "a sky blue tint" (p.77); further, sometimes it is the most perceptive who see that "all natural goods perish, riches take wings, fame is a breadth; love is a cheat; youth and health and pleasure will vanish" (p.120).

The study of later life resilience is ideally suited to embrace these combined realities, coming as it does with undeniable loss and decline, and ultimately concluding with mortality. Even as death approaches, there is for many, a powerful urge to go on living. Tennyson gave voice to this courage in his poem *Ulysses* (Bloom, 2000), which ends with the famous lines

> *Though much is taken, much abides; and though*
>
> *We are not now that strength which in old days*
>
> *Moved heaven and earth; that which we are, we are;*
>
> *One equal temper of heroic hearts,*
>
> *Made weak by time and fate, but strong in will*
>
> *To strive, to see, to find, and not to yield. (p.78).*

The great irony is that the confrontation with challenge, combined with recognition of one's mortality, may be what ultimately hones deep psychological strengths. That is, the source of meaning, purpose, and self-realization may paradoxically be in the difficulties individuals encounter on their life journeys. For those open to this possibility, the greatest understanding and insight may come at the end. To the extent that research on later life resilience brings these ever-richer human capacities to the light so that those younger can contemplate and learn from them, scholarly time and effort will have been well spent.

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CHAPTER 5

Cognitive Resilience in Adulthood

Elizabeth A. L. Stine-Morrow and Helena Chui

ABSTRACT

A resilience framework for understanding cognitive aging implies a search for
factors that buffer against existing risk, enabling one to thrive in what might
otherwise be adverse circumstances. The cascade of biological processes associ-
ated with senescence and a cultural context that does not take into account this
biological imperative each create risk for cognitive decline in later adulthood. We
propose that (a) engagement, a sustained investment in mental stimulation, and
(b) personal agency, which enables one to construct a niche for successful life
span development, constitute the centerpiece of cognitive resilience. Numerous
factors at the level of the individual and the sociocultural context set the stage
for engagement and agency, thereby contributing to life span cognitive resilience,
which can in turn impact factors promoting engagement and agency (e.g., health
management, disposition affecting how experience in regulated) to support cog-
nitive growth.

Cognitive development shows wide variation among individuals through the
adult life span, and there is long-standing concern with why some age more
successfully than others. Our goal in this chapter is to explore the nature of such
cognitive resilience through adulthood. Historically, the concept of resilience
arose in the child development literature as a framework to understand why
some children who grow up under circumstances of great adversity, neverthe-
less, thrive (Masten & Wright, 2010). Thus, framing successful aging in terms of
resilience puts the emphasis on the factors that protect against risks associated

with aging, so that an understanding of resilience requires an analysis of both the threats to successful development and protective factors. We take for granted that both developmental continuity (e.g., Evans & Schamberg, 2009) and plasticity (e.g., Hertzog, Kramer, Wilson, & Lindenberger, 2008) are powerful forces of development, with threats and protective factors that buffer against those threats defining a lifelong resilience process.

Senescence, the biological process of aging, certainly circumscribes limits on cognitive components requiring speeded information processing and executive control in later life, and increases vulnerability to pathological processes that can compromise cognitive health. However, as a natural part of the life cycle, senescence itself is not so much a threat to successful development as is a cultural context that does accommodate this developmental period of later life. Cultural threats might be viewed as of two forms. First, it is widely recognized that attitudes about aging can be internalized in the form of negative aging stereotypes, which can compromise cognition by discouraging the recruitment of effort to the task at hand (Hess, Auman, Colcombe, & Rahhal, 2003). Beyond that, however, cultural institutions and social structures can also be a threat to successful development to the extent that they do not afford resources to prepare people to live long lives (Riley & Riley, 2000).

As we will detail in this review, protective factors are diverse, but we take the organizing principle of cognitive resilience to be twofold: (a) engagement, a sustained investment in experiences that enrich mental capacity (Stine-Morrow, 2007), and (b) agency, the ability to create a niche to support such an investment amidst changing circumstances (Hertzog & Jopp, 2010; Werner, 1995). Thus, lifelong cognitive resilience depends on the capacity to adapt to internal factors (e.g., senescence) and external factors (e.g., stressors, culture-bound expectations) to maintain habits of personally satisfying mental engagement. Agency in sustaining an engaged lifestyle does not just derive from naive optimism (e.g., the "little engine that could"), but rather from a whole constellation of resources crafted over the life span that puts force behind one's sense of agency (e.g., Infurna, Gerstorf, Ram, Schupp, & Wagner, 2011).

Cognitive capacity does not come for free. By some estimates, proficiency in a substantive skill requires about 10,000 hours of deliberate practice (Ericsson, Krampe, Tesch-Römer, 1993; Gladwell, 2008). The normalization of optimal life span cognitive development, then, will ultimately derive from cultural and social institutions (e.g., health care, educational resources) that position individuals for effective engagement in experiences and activities that nurture cognition on a large scale over extended time. In the pages that follow, we consider the factors that have potential to contribute to cognitive resilience through the life span. The "10,000-hour rule" implies that not all skills will be developed to an equal extent and that cognitive resilience must entail selectivity in what is optimized, as well as

compensatory strategies for managing activities that depend on nonoptimized skills. Because plasticity decreases with age, the "10,000-hour rule" might be expected to become something like a "15,000-hour rule" for new skills developed in late life. However, the 10,000-hour rule also implies that by mid-to-later adulthood, investment in skill development of various sorts creates selected areas of established proficiencies, so that expanding on existing skill may depend on more like a "5,000-hour rule." Nevertheless, this scale of investment requires a life context that permits such a commitment. As such, developmental forces of selection, optimization, and compensation (SOC) become increasingly important to resilience through adulthood (Baltes, 1997). At the same time, resilience is a sociocultural process as well, insofar as affordances for adaptation are co-constructed by the individual and the sociocultural context in which one is embedded (Baltes, Reuter-Lorenz, & Rösler, 2006). We consider a number of broad factors that contribute to processes of life span cognitive resilience: (a) health; (b) education and cognitive reserve; (c) knowledge; (d) lifelong intellectual engagement; (e) dispositions, temperament, and motivational reserve; (f) social support; and (g) sociocultural context.

PHYSICAL HEALTH

A burgeoning literature has emerged in recent years suggesting that a healthy mind requires a healthy body. Health is not simply the absence of disease, but rather a coordinated system of regulatory capacities that afford wellness.

Aerobic Exercise

Among the most consistently demonstrated health effects on cognition is that of physical activity (Hillman, Erickson, & Kramer, 2008). For example, in a meta-analysis of intervention studies in which late middle-aged and older adults were randomly assigned to an exercise condition (either aerobic or aerobic combined with strength training) or a control condition, Colcombe and Kramer (2003) showed that change in the exercise group from pretest to posttest (effect size = .49) was reliably greater than change in the control group (effect size = .16). Exercise was found to improve an array of cognitive components, but the strongest of the effects was on executive function (effect size = .68), which was robust even for interventions of a relatively modest duration (1–3 months). Effects of aerobic conditioning on cognition were found to be somewhat greater when it was augmented with strength training.

There is much recent research activity devoted to understanding the mechanisms underlying these effects using both animal and human models (Hillman et al., 2008). It appears that aerobic activity exerts its effects on mental capacity via a number of biochemical pathways that enhance neurogenesis, angiogenesis, and functional architecture of the brain. For example, improved

aerobic fitness has been related to the expansion of gray matter in the prefrontal and temporal regions, changes that are related to improvements in performance. One of the most reliable effects of exercise is increased growth and survival of cells in the dentate gyrus of the hippocampus, a brain structure essential for memory consolidation. This cell growth is supported by the growth of vasculature needed for transport of nutrients and stimulated by increased upregulation of brain-derived neurotropic factor (BDNF). fMRI data suggest that physically fit individuals exert more top-down control to avoid response conflict and show different patterns of neural recruitment (more middle frontal gyrus and superior parietal, but less activation of the anterior cingulated) that support better selective attention performance.

Collectively, then, fitness engendered by aerobic exercise is an important facet of cognitive resilience. Importantly, these effects begin very early in the life span (Hillman et al., 2008), with math and reading achievement showing strong relationships with aerobic capacity. So although the Colcombe and Kramer meta-analysis shows that increased fitness can be a powerful cognitive intervention in later life, it is likely that building habits of exercise in childhood and young adulthood is a source of lifelong cognitive resilience.

Maintain a Healthy Weight

There is a fair amount of empirical support for a link between maintaining a healthy weight and cognitive resilience. For example, using longitudinal data from the Swedish Adoption/Twin Study of Aging, Dahl et al. (2010) showed that, controlling for education, cardiovascular disease (CVD), smoking, and alcohol use, the body mass index (BMI) at midlife was predictive of cognitive decline into later adulthood. This relationship was obtained whether or not individuals who were diagnosed with dementia during the study were included for analysis.

The causal mechanisms of the weight-cognition link remain unclear. Obesity rarely occurs alone, but rather in conjunction with other factors that compromise health. The term "metabolic syndrome" is used to characterize the clustering of symptoms—including abdominal obesity (in which fat tissue is disproportionately distributed around the abdomen), cholesterol disorders, hypertension, and insulin resistance—that collectively increase the risk of CVD and type II diabetes. Diabetes, which has been shown to predict declines in speed of processing and memory performance (Elias, Elias, Sullivan, Wolf, & D'Agostino, 2005; Ryan, 2005), may affect brain health through a variety of mechanisms, such as disrupting neurotransmitter pathways and transport of glucose across the blood–brain barrier. Based on a review of population-based prospective studies, Hao, Wu, Wang, and Liu (2011) concluded that metabolic syndrome was predictive of later cognitive declines, but did not increase the risk of Alzheimer's disease (AD).

Gatto et al. (2008) compared groups of postmenopausal women with and without metabolic syndrome who were screened to be free of CVD and diabetes. Those without metabolic syndrome had an advantage on a measure of global cognition (an effect that could not have been attributable to cardiovascular health or absence of diabetes). Based on an analysis of longitudinal data from the Lothian Birth Cohort Study, Corley, Gow, Starr, and Deary (2010) concluded that the correlation between BMI and cognition could be accounted for in terms of socioeconomic status and early life cognition without any direct effect of weight on cognition. Given the neurobiological correlates of obesity and related metabolic effects, a dismissal of a causal link between maintaining a healthy weight and good cognitive functioning is probably premature. Their data do suggest, however, that advantages early in life set up patterns of self-regulation through the life span that play out in both higher levels of cognitive functioning and better weight management.

Manage Stress

We are designed to adapt to challenging circumstance. Our physiology is wired for "fight or flight" as needed for adaptation to changing situations. This capacity to dynamically adjust to external demands, of course, has survival value, but unchecked chronic stress is toxic (Oitzl, Champagne, van der Veen, & de Kloet, 2010). Preparation to deal with a stressor involves the release of *cortisol* that impacts carbohydrate metabolism to release energy reserves, suppresses the immune system, and affects cognitive function by both suppressing processing of information that is not relevant to the situation and promoting memory consolidation—all effects that enable coping with challenge in the short run. However, chronic exposure to cortisol sets up a cascade of processes that can self-perpetuate damage to neurons, especially in the hippocampus.

One's emotional response to challenging situations may moderate the stress response. Although some individuals respond to challenge with positive affect, some may be more likely to perceive challenge as threatening and react with negative affect. Such a disposition (typically characterized as *neuroticism*, as we will detail in the following text) may exacerbate the damaging effects of stress on cognition. Neupert, Mroczek, and Spiro (2008) analyzed diary reports of participants from the Normative Aging Study over 8 days and found that reports of stress were coupled with reports of memory failures, but that this effect was heightened for those higher in neuroticism.

There is empirical evidence for the long-term cost of stress on cognition earlier in the life span. Evans and Schamberg (2009) showed that the link between childhood poverty and working memory capacity in adolescence could be entirely accounted for with a composite measure reflecting the cumulative

physiological cost of stress ("allostatic load"), including resting blood pressure and urinary cortisol. Research with animal models (Oitzl et al., 2010) suggests that vulnerability to stress and the development of buffers against the negative effects of stress are likely lifelong processes. Thus, the development of strategies for managing stress is an important source of cognitive resilience.

Sleep

Sleep can play an important role in protecting cognition through adulthood. It has long been known that insomnia predicts poorer cognitive performance, but it is also the case that even minor sleep disturbances in otherwise healthy, community-dwelling elders can negatively impact cognition. Nebes, Buysse, Halligan, Houck, and Monk (2009) found that individuals with better sleep quality (e.g., who fell asleep more quickly and were able to stay asleep) performed significantly better on measures of working memory, abstract problem solving, and executive control. Variation in sleep quality did not significantly relate to speed of processing or inhibition, suggesting that sleep specifically protects the ability to sustain focus in complex tasks.

Day-to-day variation in sleep can impact cognitive performance as well. Gamaldo, Allaire, and Whitfield (2010) assessed sleep and cognitive performance on 8 different days across a period of 2–3 weeks, and showed that within-individual deviations (either more or less) away from one's mean level of sleep (in this sample, about 6 hours) was coupled with relatively poorer cognition the next day. The causal mechanisms for this relationship are unclear. Although it seems entirely plausible that variations in sleep could directly impact cognition, it is also the case that (as noted previously) daily stress covaries with daily cognitive performance, so it may also be that stress is a third variable that compromises both cognition and sleep.

Collectively, the empirical literature suggests that consistency in good quality sleep is an important source of cognitive resilience. Interestingly, poor sleepers often have higher resting levels of cortisol, so it is probably the case that good sleep and managing stress are inevitably linked in protecting cognition.

Alcohol Consumption

Although there is some evidence that moderate levels of alcohol consumption can be favorable to cognition, the empirical case is somewhat stronger that avoiding excessive alcohol consumption is even better (Gross et al., 2011). Gross et al. used data from the Johns Hopkins Precursors Study, a longitudinal study of medical students into middle age and later adulthood to prospectively examine the effects of alcohol consumption on cognition in old age. They showed that regardless of the time point at which alcohol use was measured, it was a negative

predictor of phonemic fluency, a measure of executive control. For example, beyond about 15 drinks per week, alcohol consumption was a negative predictor of phonemic fluency 12 years later.

Recap

This brief review suggests that the effects of physical health on cognition are diverse. Health and wellness likely impact cognition in a number of ways, including direct biochemical and neural pathways that enhance plasticity, and indirect pathways of enhanced capacity to sustain engagement and agency in cognitively challenging situation. Cognitive capacity can also impact health, so that cognition and health may sustain one another through reciprocal causation. For example, cognitive capacity appears to buffer the impact of stress on affect (Stawski, Almeida, Lachman, Tun, Rosnick, 2010); also, cognitive capacity can be an important resource for continued management of health and wellness (Morrow & Durso, 2011).

EDUCATION AND COGNITIVE RESERVE

An important factor contributing to lifelong resilience in cognition is an extended period of engagement in formal education early in the life span, an effect that has been attributed to "cognitive reserve" (Stern, 2009). The explanation is that early educational experiences, when brain and behavior are at their maximum potential for plasticity, build neural networks and behavioral strategies that buffer against subsequent insults, so that the manifestation of brain pathology or damage is delayed. Approximately a quarter of community-dwelling individuals who show no obvious performance impairments before death will show evidence of brain pathology at autopsy. This proportion is greater for individuals with higher educational levels than it is for lower levels of education, suggesting that education builds a reserve, in terms of efficiency of neural networks, capacity, and/or flexibility in the use of networks or strategies that enable individuals with incipient pathology to recruit this reserve to preserve function. A number of studies have shown that more highly educated individuals tend to be diagnosed with AD at later ages than less educated adults, but once diagnosed, their cognitive decline is more precipitous. Also, data from the Nun Study, in which a number of long-term lifestyle factors are controlled, have suggested that the rate of AD is lower among those with more years of formal education early in the life span (Mortimer, Snowdon, & Markesbery, 2003). However, based on a large sample from the Canberra Longitudinal Study, Batterham, Mackinnon, and Christensen (2011) concluded that this may depend on the particular cognitive domain assessed,

with only speed of processing showing a delayed change point and slightly accelerated decline with increasing education (and not global cognitive status or memory).

One particular sort of early educational experience that shows evidence of wide-ranging effects on cognition is learning a second language (Bialystok, Craik, Green, & Gollan, 2009). Although early studies of bilingualism focused on aspects of delayed acquisition in childhood, this was a misconception that was a consequence of neglecting the combined acquisition (e.g., vocabulary) of both languages. More recent research suggests strong advantages of bilingualism for cognitive resilience. Globalization has contributed to an acceleration of research on the cognitive processes underlying bilingualism and multilingualism, with much of this literature showing lifelong benefits for language and thought. For example, the experience of negotiating two languages early in the life span gives the bilingual child an early window into the insight that one object can have more than one name, and by extension, that the description of events can depend on the observer. There is much evidence that bilinguals communicating in their second language, nevertheless activate features of their first language, which must be suppressed in order to effectively manage the target language. This lifelong practice with flexible switching between two language systems, and controlling interference between the two, exercises executive control on a routine basis. In fact, older bilinguals show reduced decline on measures of executive control relative to monolinguals, and multilinguals appear to show a further advantage still.

Collectively, educational experiences early in the life span impact cognitive resilience via a number of routes. Education builds a cognitive and neural reserve that buffers late-life pathology, but also affords skills and regulatory capacities that engender continue engagement.

KNOWLEDGE

Knowledge developed throughout the life span is a key resource for resilience in cognition. The growth of knowledge occurs in multiple arenas. Verbal ability, including vocabulary knowledge and proceduralized skills in reading, can show positive development into adulthood with continued practice in literacy activities. Domain knowledge continues to develop with continued investment in occupational and avocational activities. Such particularized knowledge can be complex and build a reservoir of declarative knowledge that can provide a context through which to assimilate new information, as well as skills that engender both effective selection and greater efficiency in domain-related learning (Miller, 2009).

COGNITIVE STIMULATION AND
INTELLECTUAL ENGAGEMENT

The aphorism to "use it or lose it" has become a commonplace, and in fact, there is a well-replicated relationship between a lifestyle that incorporates engagement in intellectually stimulating activity and level of cognitive ability (e.g., Hultsch, Hertzog, Small, & Dixon, 1999; Jopp & Hertzog, 2007; Kemper, Greiner, Marquis, Prenovost, & Mitzner, 2001; Parisi, Stine-Morrow, Noh, & Morrow, 2009; Schooler, Mulatu, & Oates, 2004; Verghese et al., 2003). Intellectual stimulation has been assessed in myriad ways, including complex work or leisure activities, and frequency of participation in novel activities. Many of these studies provide interesting data consistent with the idea that habits of intellectual engagement can buffer age-related declines, with demonstrations of a cross-sectional or a prospective correlation. There are two difficulties with drawing firm conclusions about causation, however. First, if an intellectually stimulating lifestyle really acts as a buffer, one might expect for age declines or age differences to be reduced among those who are more intellectually active (statistically, an age by experience interaction), but there is actually little evidence for this. Rather, intellectually active individuals (either measured as disposition or self-reported activity) often have a cognitive advantage over inactive individuals that is sustained over the life span, but they do not age better (Salthouse, 2006). However, assuming that the senescence process places some constraints on the developmental trajectory of cognition (Hertzog et al., 2008), the expectation for differential cognitive growth among intellectually active people throughout the life span may set a bar for evidence that is too high. A more serious concern with drawing causal conclusions from these studies is that they are vulnerable to the interpretation that those who are cognitively impaired may differentially withdraw from activity, so that it is the decline in mental capacity that leads to withdrawal from cognitive activity, rather than the reverse.

Rohwedder and Willis (2010) took a clever approach to addressing this issue by comparing cognitive scores cross-nationally as a function of retirement policies—over which individuals have minimal direct control. To do this analysis, they took advantage of data from three cross-national surveys that were collaboratively designed to provide comparable assessments: the Health and Retirement Study in the United States; the English Longitudinal Study of Aging; and the Survey of Health, Ageing, and Retirement in Europe, which collected data from 11 European countries. Surveys were based on large nationally representative samples and administered over the phone. The cognitive assessment incorporated into the larger survey was delayed recall for 10 concrete nouns, a task that very often shows reliable age declines in the literature. Results showed that individuals in countries that had policies incentivizing early retirement (e.g., by

taxing earned income at a higher rate) had steeper declines in memory between the early 50s and early 60s. Thus, even though correlational, the relationship between engagement in work and mental decline reported by Rohwedder and Willis strongly implies that the mental demands of work promote cognitive resilience.

Another way to address the causal ambiguity of the correlational literature is to conduct experiments in which participants are randomly assigned to some condition that promotes intellectual stimulation or to a control. Although there is a rich history in the psychology of aging examining the effects of cognitive interventions, a long-standing focus on ability-specific training studies has been expanded in recent years to include more lifestyle interventions (Stine-Morrow & Basak, 2011). In short, the training literature has been clear in showing that there is substantial neural and behavioral plasticity into very late life, but the effects of training are highly specific to the ability trained, with no transfer to even factorial-related abilities. Lifestyle interventions embed individuals in complex environments in which multiple abilities may be exercised and/or in which individuals can shape the way they response to challenges through selective use of different abilities. There is some evidence that engagement with video games that require strategic reasoning can augment executive control among older adults (Basak, Boot, Voss, & Kramer, 2008). Community-based programs also show promise. The Experience Corps program that places older adults in schools to work with children directly or as support staff has shown evidence of enhancing cognition (Carlson et al., 2008). The Senior Odyssey program in which older adults engage in team-based creative problem solving geared toward tournament competition has also shown evidence of improving cognition (Stine-Morrow, Parisi, Morrow, & Park, 2008).

In spite of the robust of effects of early education on late-life cognition documented in an earlier section, it is possible that a lifestyle of continued cognitive stimulation can trump early experience. For example, data from the Midlife in the United States (MIDUS) study suggest that the negative effects of early impoverished educational experiences on episodic memory can to some extent be offset by frequent engagement in cognitive activities, such as literacy activities and puzzles (Lachman, Agrigoroaei, Murphy, & Tun, 2010).

Investment in activities that push the boundaries on one's abilities can be exhilarating. To the extent that one builds cognitive capacity through such patterns of engagement, one would expect cognitive capacity to be maintained or continue to grow, which makes subsequent encounters with cognitive challenge more pleasurable. In fact, there is evidence that older adults with higher levels of cognitive ability derive more pleasure with more cognitively challenging

activities, whereas adults with lower levels of abilities enjoy less challenging activities (Payne, Jackson, Noh, & Stine-Morrow, 2011). Thus, lifestyle habits of intellectual engagement may be self-perpetuating.

DISPOSITION, TEMPERAMENT, AND MOTIVATIONAL RESERVE

Aside from the particular habits of intellectual engagement that are likely to build behavioral and brain reserve, there may be certain aspects of disposition and temperament that can impact the value of ordinary experience as an avenue for cognitive enrichment, as well as engendering or inhibiting stimulating behavioral repertoires. A rich literature is developing, which examines interrelationships between cognition and personality traits (Duberstein et al., 2011). For example, openness to experience—a trait marked by enjoyment of novelty, fantasy, and emotional experience; attunement to the environment; and mental flexibility—has been shown in a number of studies to be related to measures of cognitive performance (Parisi et al., 2009; Soubelet & Salthouse, 2010, 2011), as well as to reduced risk of AD (Duberstein et al.). This is perhaps not that surprising inasmuch as habitual enjoyment with intellectual activity would presumably enhance routine engagement of cognitive capacities to incorporate mental exercise into everyday activities, thereby building intellectual capacity. In fact, there is evidence that those who are high in the intellect facet of openness recruit more neural resources during a working memory task (DeYoung, Shamosh, Green, Braver, & Gray, 2009).

By contrast, *neuroticism*, a tendency to worry and to feel anxious and threatened in ordinary situations, has been hypothesized to be a risk factor for cognitive impairment. Such thought patterns—of course—are likely to create distraction from the intellectual aspects of experience, but also neuroticism is related to higher levels of production of cortisol, which as noted earlier is a stress hormone known to damage the hippocampus. Neuroticism has been shown to be a risk factor for AD (Duberstein et al., 2011). However, evidence for a negative relationship between neuroticism and cognitive function in a healthy sample has been mixed (e.g., Soubelet & Salthouse , 2011), and the effect of neuroticism on cognition may depend on its context in the larger structure of personality (Crowe, Andel, Pedersen, Fratiglioni, & Gatz, 2006).

Belief that one is an active agent in effecting outcomes in the world has a profound effect on how the mind works. In a clever demonstration of this principle, Rigoni, Kühn, Sartori, and Brass (2011) measured event-related potentials for undergraduates as they performed a volitional motor task after being randomly assigned to either an experimental condition to weaken the belief in free will (subjects read Crick's argument that free will is an illusion) or a control

condition that did not (they read another passage from the same book about consciousness). The early component of the readiness potential, a negative-going wave that precedes the conscious experience of the intention to move was reliably reduced among those whose beliefs in free will were challenged, a finding the investigators interpreted as indicating a reduced effort to formulating the intention to perform the motor act.

In fact, a number of dispositional factors related to motivation have been related to cognition. Beliefs that one can influence the events in one's life and confidence that the investment of effort will pay off in performance gains, conceptualized as self-efficacy and perceived control (Lachman, 2006; Valentijn, et al., 2006), have often been shown to predict performance and have been targeted for intervention (West, Bagwell, & Dark-Freudeman, 2008). Such beliefs are an important source of cognitive resilience insofar as they underpin effective allocation of effort to activities that support and sustain cognition. For example, Payne and colleagues (2011) showed that self-efficacy at pretest predicted perseverance in a 16-week program of reasoning training as well as actual improvement in reasoning ability as a consequence of the training.

Even as a resource for cognitive resilience, such beliefs are likely to be constructed over the life span (Forstmeier & Maercker, 2008; Infurna et al., 2011). For example, Lachman and Leff (1989) have found fluid ability to predict perceived control 5 years later. Based on data from the German Socio-Economic Panel, a large-scale longitudinal study with a nationally representative sample, Infurna and colleagues (2011) showed that level of social participation contributed to control beliefs measured 8–10 years later.

Forstmeier and Maercker (2008) have coined the term "motivational reserve," arguing that, analogous to cognitive reserve, motivational resources that underpin cognition and health constitute a set of abilities that buffer age-related neuropathological insults. Using the Occupational Information Network (O*NET) system to characterize work-related activities in midlife and relate the motivational reserve developed by these activities to current cognitive status. Forstmeier and Maercker coded jobs for motivational demands (e.g., the need to develop goals and action plans for achieving them) separately from cognitive demands (e.g., the ability to concentrate on a task for a long time without distraction). Although cognitive demands were correlated with a measure of premorbid intelligence, motivational demands were not, which is the basis for the claim that motivational reserve is a construct that is separable from cognitive reserve in contributing to cognitive resilience. They found that, controlling for the cognitive demands of work, motivational reserve was predictive of cognitive status, as measured by a composite of processing speed, working memory, fluency, and inhibitory control. One might question

whether motivational reserve, as measured in this study, is truly independent of cognitive reserve. However, the notion that motivation itself may be a skill that can be developed through adulthood and targeted for intervention is an interesting one.

SOCIAL CONTEXT

Resilience is a broad concept that is not simply a trait of an individual. Resilience has been conceptualized as a dynamic system that arises from processes and interactions beyond the boundaries of the individual (Masten & Wright, 2010). Social engagement is an essential part of the dynamic system that enables positive adaptation when an individual confronts challenges or threat and has been widely studied in light of its impact on health in general (Berkman, Glass, Brissette, & Seeman, 2000). For example, social and community ties have been found to be associated with mortality and the occurrence of dementia (Fratiglioni, Wang, Ericsson, Maytan, & Winblad, 2000). We will focus on how social engagement may have an impact on individuals' adaptation in the cognitive domain.

Social engagement can be characterized along a number of distinct dimensions (Krueger et al., 2009). Social network size is the number of people with which an individual has significant contact. Social activity is the engagement in experiences that involve other people. Social support is the subjective evaluation of the quality of social relations as warm, affirming, and a resource for help in times of stress.

Social engagement may be increasingly important for individuals' adaptation with age (Charles & Carstensen, 2010). According to socioemotional selectivity theory (SST), with increasing age comes recognition of a more limited temporal horizon, which stimulates a shift in priorities. Although knowledge acquisition is adaptive when the temporal horizon is expansive, as time becomes more limited, individuals prioritize emotionally meaningful experiences, and thus, substantive social engagement. Consequently, with aging, emotional satisfaction and meaning from close interpersonal relationships (i.e., social support) are expected to have priority over opportunities for information gain that would be more likely to be engendered by large social networks.

Based on a nonclinical cross-sectional sample of community-dwelling older adults, Krueger et al. (2009) found that, controlling for age, sex, and education, both social support and social activity were positively associated with global cognitive functioning. In contrast, consistent with SST, social network size was not. In addition, a recent study showed that more frequent social activity was associated with reduced rates of decline in episodic memory, semantic memory,

working memory, perceptual speed, and visuospatial ability over 5 years (James, Wilson, & Barnes, 2011). In a national sample of older adults, social integration (measured in terms of marital status, contact with social partners, and volunteering) was found to be associated with a reduced memory decline in a 6-year period (Ertel, Glymour, & Berkman, 2008). In this study, the measure of social integration appeared to reflect a combination of social network size and social activity, leaving open the possibility that social network size contributed to the reduced memory decline observed in this study. Bennett et al. (2006) found that the association between cognitive functioning and indices of brain pathology measured postmortem at autopsy was reduced among those with larger social networks, even controlling for levels of cognitive and social activity. Such data suggest that social networks can act as a sort of cognitive reserve that cannot be explained by cognitive stimulation or social activity. Interestingly, in Bennett's measure of social networks, participants were asked to include people with whom they interacted frequently and with whom they felt comfortable and could call on for help, suggesting that social support may have been a source of reserve.

A review of empirical findings leads to the conclusion that social context is an important source of cognitive reserve. Older adults tend to regulate the social environment to prioritize interactions with close ties, and thus social support, and derive a sense of well-being through this process. However, it may also be the case that complex social networks, social activity, or some combination with social support will also contribute to cognitive resilience. Thus, further study is needed to tease apart the different facets of social context that have direct and indirect impact on cognitive performance in older adults.

An obvious concern with drawing conclusions about a protective effect of social engagement on cognition from the correlational data is whether low social activity puts individuals at a higher risk of memory decline or whether poor memory causes individuals to withdraw from social activities. Capitalizing on the availability of longitudinal data, two studies (Ertel et al., 2008; James et al., 2011) showed that cognitive function at baseline could not explain the observed memory decline. Similarly, another longitudinal study (Lövdén, Ghisletta, & Lindenberger, 2005) showed that prior scores of social activity influenced perceptual speed in older adults 8 years later. A test of reverse causation showed that perceptual speed did not influence social activity.

Taken together, the empirical evidence suggests that social engagement serves as a resource to enable older adults' optimal cognitive functioning. However, more research is needed to isolate the mechanism(s) of how social engagement impacts cognitive functioning.

SOCIOCULTURAL CONTEXT

Sociocultural context includes the social institutions and cultural practices that offer opportunities for cognitive engagement (e.g., by defining roles) and influence access to resources that impact cognition (e.g., social communities, health care, technology). Resilience at the cultural level has been increasingly discussed (Zautra, Hall, & Murray, 2010) since Baltes (1997) argued that life span psychology research has largely ignored cultural and historical context. In particular, the co-constructionist approach emphasizes the interactions between biological and cultural evolution (Baltes et al., 2006; Li, 2003). On the one hand, individuals navigate the sociocultural milieu, negotiate the resources needed for their development, and thereby shape the culture. On the other hand, communities and cultures adapt to individual needs (Hall & Zautra, 2010). Some cultures are more able than others to mobilize existing resources to buffer the effects of stress at the individual level (Zautra et al., 2010). Few studies have investigated sociocultural effects on cognition, though there are emerging examples (e.g., Carlson et al., 2008). Recent evidence from neuroimaging studies also showed differences in neurocognitive processes, neural activation patterns, and neural structures between individuals from individualistic and collective cultures (Park & Huang, 2010). Individualistic (Western) cultures that value individual achievement appear to wire brains so that processing is biased toward processing central objects, whereas collectivistic (Eastern) cultures that place more value on collaboration and interdependence appear to wire brains for more holistic processing. These are interesting and provocative findings with more research needed to address whether other culture-related attributes might contribute to this adaptation.

In the cognitive domain, educational institutions are infrastructures that communities and cultures provide that have direct effects on individuals' cognitive performance. At the individual level, the effect of education can be readily revealed by examining the behavioral and neurological differences in literate and illiterate individuals within cultures that distribute opportunities for literacy development arbitrarily (Reis & Castro-Caldas, 1997; Reis, Petersson, Castro-Caldas, & Ingvar, 2001). At the sociocultural level, educational institutions shape who has access to literacy and how opportunities for cognitive enrichment are distributed. The opportunities for formal education also contribute to the levels of literacy that one is likely to encounter among individuals who will form one's social network. In turn, literacy in the social network impacts individuals' intellectual activities such as reading.

Opportunities for learning may be organized differently across social groups with lasting effects. For instance, experience with racial segregation at school age can have a lifelong impact on cognitive performance. Focusing on the

effect of desegregation, Whitfield and Wiggins (2003) found that older African Americans who attended desegregated schools ultimately achieved more years of education than those who attended segregated schools. In addition, after controlling for age, gender, and years of education, African Americans who attended desegregated schools showed better vocabulary and spatial ability, compared to those who attended segregated schools. However, Allaire and Whitfield (2004) reported that age declines in cognitive ability (including inductive reasoning and speed) were found only among those who had experienced desegregation. Also, educational attainment had more of a positive impact on cognition in later adulthood among those who had attended segregated schools. The authors speculate that the experience of racism, as well as the quality of education, in the early efforts at desegregation may explain these effects. The differential impact of segregation on cognitive ability and declines in cognitive ability seem to suggest resilience in older adults who experienced less than optimal education experiences early in life. Although attending segregated schools might lead to fewer years of education and lower level of cognitive ability, individuals who attended segregated schools seem to be better able to retain cognitive skills with age. These results, although complex, hint at the profound lifelong impact of a sociocultural context that affords truly equal opportunities for access to education.

CONCLUSIONS AND IMPLICATIONS FOR RESEARCH AND PRACTICE

Cognitive resilience is a multidimensional process in which resources assembled through the life span buffer against late life threats to cognitive health (Lachman & Agrigoroaei, 2010). In our view, the nexus of the resilience process is a sense of personal agency, engendered by an array of individual factors (e.g., health; cognitive and motivational reserve), social factors (e.g., social support), and sociocultural factors (e.g., social equity, effective structures for life span education), that nurture sustained intellectual engagement. Certainly, all of these elements contribute to the individual capacity for adaptations (e.g., SOC) that give rise to continued autonomy. To be sure, cognitive resilience is certainly a resource for autonomy through which to maintain and nurture health, social networks, and behavioral repertoires that are rich and satisfying.

Early research in cognitive aging was geared primarily toward distinguishing processing components that are age-sensitive or not. Theoretical perspectives on successful aging and resilience, combined with developments in multivariate statistical methods, have shifted the focus to principles that define individual differences in trajectories of development. It is important that future research continue to explore the factors that buffer against internal and external

threats to successful development and find translation in effective intervention. An area ripe for exploration is the way in which buffering factors interact and reinforce one another. For example, how do health and fitness enable individuals to maintain supportive social networks and to take advantages of opportunities for cognitive enrichment? To what extent are the positive effects of fitness on cognition direct and to what extent are they attributable to an increased sensitivity to cognitively enriching experiences? How can social structures be arranged to promote the capacity for agency and offer opportunities for intellectual stimulation? What are effective translational models for intervention? Assuming that resilience is an ongoing process in which different factors reciprocally reinforce one another (e.g., healthy sleep patterns and exercise habits promote effective coping with challenge to enable cognitive growth, which in turn enable self-regulatory efficacy in lifestyle management), what are the best options for intervening in this cycle when things go awry? Another important open question has to do with life span timing. Finally, effective translation will require research into dose-response functions for the resiliency factors that we have outlined here, especially as they might change through the life span. It is easy enough to be inspired to make the relatively simple choices in lifestyle that have promise for cognitive resilience—exercise, eat right, engage in activities that enrich the mind, enjoy the comfort of friends and family—but to be undone by uncertainty about how to balance these worthy investments of effort. To the extent that agency is central to sustained engagement, practitioners find themselves having to strike a delicate balance between both creating social/institutional structures and therapeutic interventions that articulate principles of life span resilience and affording choice.

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An Ecological Model of Resilience in Late Life

Carolyn Aldwin and Heidi Igarashi

ABSTRACT

Resilience is a phenomenon seen at the individual, contextual, and larger sociocultural levels. In later adulthood, it has been equated with successful or optimal aging. We present a transactional, ecological model that is based on individual stress and coping processes, which are informed by resources and barriers at the community and sociocultural levels. However, our model is also informed by contributions from positive psychology including mindfulness, compassion, and self-transcendence. Applying the model to chronic health problems such as diabetes, demonstrates that change and/ or interventions are required at all three levels. It is important to recognize the resilience in older adults contributes to resilience at the community and sociocultural levels.

INTRODUCTION

The construct of resilience has largely been applied to childhood, but similar constructs have been discussed in the gerontological literature using different terminology. What both literatures share is an increasing recognition that resilience is not so much a characteristic of an individual, but occurs as a process unfolding over time within contexts. Thus, this chapter will develop a preliminary ecological model of resilience and apply it to individuals and their communities in late

life. We will first briefly review theories of resilience, and then turn to recent literature on resilience in late life.

The second section will focus on aging in place and how communities can promote health and adaptation in later life. Specifically, we review theories of environmental competence in late life, how the sociospatial environment can promote resilient aging, and the importance of place attachment for well-being in older adults.

The third section will examine constructs from positive psychology such as mindfulness, wisdom, and dyadic interdependence to explore their importance to theories of resilient aging. We will argue that positive psychology errs in treating these constructs as individual traits rather than developing within an ecological context; the development of mindfulness and wisdom in turn impacts on the social environment. Finally, we will conclude with some recommendations for future public policy. Using a chronic illness (diabetes), we illustrate the importance of all three levels—individual, community, and sociocultural context—in reversing the secular trend in obesity and diabetes, which threatens optimal aging as well as the resilience of the larger health care and economic systems.

Current Issues in Resilience Research

In the child development literature, definitions of resilience tend to be fairly straightforward. Luthar (2006) simply defined resilience as positive adaptation under adversity; Masten and Wright (2009, p. 215) defined it as "positive adaptation in any kind of dynamic system that comes under challenge or threat." Werner (1995, p. 81) identified three aspects: "good developmental outcomes despite high-risk status, sustained competence under stress, and recovery from trauma." Nonetheless, there is substantial disagreement concerning the nature of resilience. We will focus on what we perceive to be two central issues. First, is resilience a process (Luthar, 2006), an outcome (Masten & Wright, 2009), or a resource (Butler, 2007)? Second, what role does the immediate social context and the larger sociocultural environment play in resilience?

In the adult development literature, the definitions of resilience tend to be more complex. Allen, Haley, Harris, Fowler, and Pruthi (2011) distinguished between resilience as a process and as an outcome. They defined resilience as "the developmental process of being mindful of and prioritizing those behaviors, thoughts, and feelings that facilitate contentment within a specific developmental, physical, emotional, and spiritual context" (p. 2). Hochhalter, Smith, and Ory (2011) equate resilience in late life with the construct of successful aging, borrowing the World Health Organization's (WHO, 2002, p. 12) definition: "The process of optimizing opportunities for health, participation and security in order to enhance quality of life as people age."

Others more explicitly link resilience in adulthood with stress and coping processes. Zautra, Arewasikporn, and Davis (2010) presented a rather novel approach to resilience using the dynamic model of affect (DMA). DMA proposes that, under normal conditions, positive and negative affect are unrelated or orthogonal, but under stress, they become more unidimensional, with positive and negative affect on opposite poles. Zautra et al. argued that the most successful coping strategies, such as humor and deriving comfort from loved ones, allow an individual to maintain positive adaptation during adversity. In other words, resilient individuals are more likely to maintain the orthogonality of positive and negative affect under stress, in part by accessing resources in the social environment.

This pairing of positive and negative affect under stressful conditions has also been noted in the stress-related growth (SRG) literature, which is also referred to as posttraumatic growth (PTG; see Aldwin, Levenson, & Kelly, 2009). As we shall see, SRG also has strong conceptual similarities to the resilience literature, with similar issues around whether SRG is an outcome, a process, or a resource. A major issue in this field is whether trauma is necessary to engender such growth or whether a variety of different stressors, including chronic ones such as caregiving or poverty, can also result in growth. For example, traumatic stress may be more focused on dramatic and qualitative shifts in identity while facing the challenges of everyday, and chronic stress may be more involved in the gradual developing of coping skills, self-confidence, and mastery.

We have argued that the process of coping with stress can create resources for resilience, which may prove useful in future coping episodes (Aldwin et al., 2009). In an exploratory study, nearly 80% of men undergoing a current stressor said that they drew on resources from the past (Aldwin, Sutton, & Lachman, 1996). Surprisingly, only 20% drew on similar stressful experiences; most drew on what Antonovsky (1979) might call generalized resistance resources (GRRs), for example, coping by learning to regulate one's emotions under stress or by applying values and perspectives gained from dealing with earlier traumas such as combat.

Thus, resilience is simultaneously a process, an outcome, and a resource depending on the level of analysis and stage in the developmental process (see Figure 6.1). At the heart of resilience is the process of coping with stress. This may lead to either PTG or SRG, depending on the type of stressor and/or coping strategies used (note that negative outcomes are not depicted in this model). Experience in coping with major stressors may lead to resilience outcomes such as increases in coping repertoires and greater flexibility in coping. Westphal and Bonnano (2007) argued that this flexible stance is the hallmark of resilience. This process may lead to more GRRs, which may reflect individual characteristics,
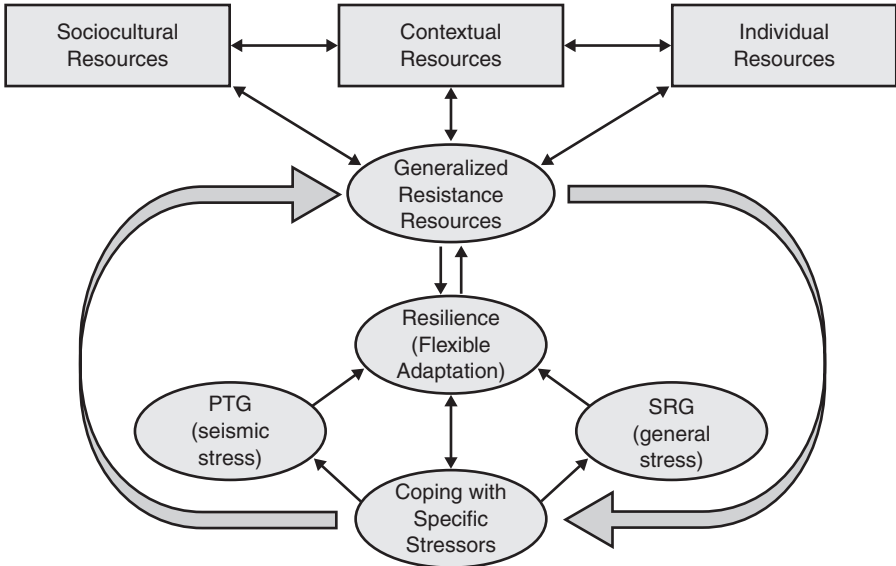
FIGURE 6.1 An ecological model of resilience.

contextual influences (such as supportive family and friends), and broader sociocultural influences such as cultural institutions useful for resolving conflicts and helping individuals cope with stress. Further, this model is transactional and unfolds over time: GRRs may also influence how individuals cope with future stressors as well as their ability to develop the flexibility characteristic of resilience.

THE ECOLOGY OF RESILIENCE

The second question addresses the role of the immediate social context and larger sociocultural environment on individual resilience. Resilience is not simply a matter of individual characteristics. Rather, contextual and community resources provide support for resilience. In this transactional model, community resources do not *cause* individual resilience; rather, they provide an *opportunity* to use resources. Further, the GRRs individuals develop from coping with stress may result in contextual and larger sociocultural resources. For example, Mothers Against Drunk Driving is an organization begun by women who had lost children in drunk-driving accidents. Their collective coping strategies lead to legislative changes involving penalties for drunk driving in an effort to reduce the risk for others. As indicated in Figure 6.1, how an individual copes with stress may

affect others in their immediate context as well as the broader social community; in turn, the immediate and broader sociocultural context may provide opportunities as well as barriers to an individual's positive coping strategies.

Our model of resilience in late life (see Figure 6.1) illustrates the transactional relationship between the individual, contextual, and sociocultural resources. Old age, similar to other periods of development such as early adolescence, can be times of instability and concentrated change when transitions are likely to occur (Masten & Obradović, 2008). Although there is great heterogeneity in aging, common examples of concentrated change in late life might include the diagnosis of illness, retirement, decreased mobility, and changes in residence. These transitional periods can open one to vulnerabilities and hazards, but can also result in healthy adaptations. From an ecological perspective, this transactional process between the nested levels of individual, family, community, and culture contributes to both assets and vulnerabilities in resilience. Thus, in Figure 6.1, sociocultural resources transact with contextual resources, which in turn transact with individual resources.

Briefly, individual resources include human capital such as temperament and intelligence, education, health, and financial status. Contextual resources typically include the immediate social and built environment as well as community characteristics. Social policies and institutional structures are part of sociocultural resources. For example, policies can direct attention toward developing community features that support aging in place, and conversely, naturally occurring retirement communities (NORCs) can inform policy makers of attributes in their communities that are necessary for independent living. How resilience and well-being can be influenced by person–environment fit (P–E fit), community cohesion, place attachment, and aging in place will be explored in the next sections.

Sociocultural Resources

The WHO (2007) has emphasized the need to redesign the social and built environments for an aging population. Lui, Everingham, Warburton, Cuthill, and Bartlett (2009) described a paradigm shift in the thinking of policy makers in which aging is now framed as an active and positive process, and aging in place is a policy goal. The input of stakeholders, the older members of the community, is recognized for both its usefulness to planners and its ability to empower and engage an often disenfranchised group. The WHO's "Age-Friendly Cities" initiative encourages cities in developed and developing countries to articulate features of Age-Friendly Cities from the perspective of older residents in those cities. "An age-friendly city emphasizes enablement rather than disablement; it is friendly for all ages and not just 'elder-friendly'" (WHO, 2007, p. 72), thus

encourages shaping communities that can be responsive to the needs of its residents throughout the life course.

Contextual Resources

Age-Friendly Cities' initiatives reflect the importance of a community's sociospatial features in facilitating positive adaptation or resilience across the life span as competencies change. Lui et al. (2009) reviewed the largely descriptive international literature on creating age-friendly cities that provides detailed lists of ideal community qualities and recommendations of policies. Models vary in their emphasis on the built environment (e.g., housing, transportation, and home modification) or social relations (e.g., inclusion, respect, participation). The built and social environments are interactive and both contribute to the resources and barriers of a community (Lui et al., 2009).

Congruent with these recommendations, Gardner's (2011) qualitative research described a neighborhood and how informal social networks of relationships were supported by existing physical places such as thresholds (driveways and elevators), transitory zones (streets and sidewalks), and third places (social places such as parks). The presence of these contextual resources, however, is not enough to convey resilience. Resilience may involve one's willingness and ability to make use of those resources, often reflective of one's GRRs.

Person–Environment Fit and Resilient Aging

Competence in old age is "an adaptational response to the interactions or confluence of individual and environmental factors" (Golant, 2011a, p. 216). Current environment-aging studies are based on Lawton and Nahemow's (1973) ecological theory of aging (ETA). The strength of ETA is in its recognition of the transactional nature of an individual and their contextual resources. ETA described the dynamic and continual interaction of person and environment (P–E) that manifests in adaptive behaviors and affective responses. Both the person and the environment could trigger a new cycle of change and adaptation.

This model is often represented in the literature as a two-dimensional process of individual competence (resources) and environmental press (demands), as well as the resulting behaviors (adaptive/maladaptive) and affect (positive/negative). With higher competence, one has a broader range of environmental press or demands that can result in positive affect and adaptive behavior. In contrast, with lower levels of competence, a lower and more narrowed range of press optimizes outcomes. Lawton and Nahemow were sensitive to a wide range of individual variables that influence competence press. For example, they considered individual cognitive styles, personal appraisal, historical–cultural factors, and self-regulation strategies such as taking the path of least resistance. Because

of these differences, individuals of similar competence levels, when measured by functional assessments, might experience the same environmental demands in unique ways suggesting that the P–E fit involves an individual's unique approach to adaptation. These individual differences in appraisal and adaptation are GRRs and reflect our model's transaction between individual resources, sociospatial context, and GRRs (see Figure 6.1).

The ETA continues to spark a productive line of research. Golant (2011b) offered a theory of *residential normalcy* that is defined by personal comfort and mastery of the environment. Residents in assisted living facilities used both problem and emotion-focused coping strategies to achieve residential normalcy by adjusting their expectations, soothing annoyances, as well as altering their physical space. These self-regulatory behaviors improved P–E fit. This concurs with Lawton's view that "intimate knowledge of the idiosyncrasies of one's dwelling is thus likely, together with a repertoire of coping skills that enhance the unit's livability" (1985, p. 508). This level of investigation is focused on the individuals and their near environment, but P–E fit can also refer to broader community level features that contribute to resilient aging.

COMMUNITY, COHESION, AND RESILIENCE

Resilience emerges from the actions of individuals and groups who have relations to one another (Masten & Obradović, 2008); thus, one can reason that a sense of community is critical to resilient aging. With the rise of globalization, transnationals, and even retired snowbirds, community can reflect both location and a group of people that have a shared connection and feelings of belonging. For example, perceptions of high levels of neighborhood cohesion and low levels of neighborhood problems were associated with significantly higher mental well-being in a large sample of older adults (Gale, Dennison, Cooper, & Sayer, 2011). These perceptions of neighborhood cohesion and problems were more strongly linked to mental well-being than objective measures of neighborhood deprivation. Neighborhood cohesion and bonding reflects a sense of community.

Salamon (2003) identified what is needed to achieve this sense of community among rural residents. There must be (a) shared spaces where they can have repeated contact, interact, and develop social bonds; (b) trust and connectedness developed through regular interaction; (c) stability and predictability; and (d) cross-age relations that encourage the development of its youth and actively infuses their values of community. Similarly, a sense of community and community competence (ability to work together to identify and meet needs) were identified as community resilience variables that were "important precursors to individual variables" such as self-efficacy, coping style, and social networks

among cyclone-prone communities (Pooley, Cohen, & O'Connor, 2006, p. 169). Recommendations to reduce disaster stress included increasing member's attachment to community and community competence. Increasing strength at the community level was seen as a way to improve individual's psychological functioning following the natural disaster. This suggests that the collective efficacy of the community could augment the adaptive capacity of the individual, thereby improving an individual's well-being and resilience.

Community attachment and engagement is important to quality of life, especially in old age. However, social exclusion can occur as a result of social and environmental changes in both rural and urban communities (Phillipson, 2007). For example, high rates of transitions of building and people, the withdrawal of services, increases in crime, and gentrification are examples of how an older person's sense of attachment to a community can change through displacement over time. What was once familiar can become foreign and isolating. How a person experiences his or her physical and social world matters to his or her well-being, health, and ability to respond to the presses of his or her environment. Attachment and engagement to one's community is part of one's GRRs and supports resilient aging.

Place Attachment and Aging in Place

Attachment to place, along with a desire for self-efficacy, contributes to a desire to age in place. "The more one knows about one's environment, the more autonomous one can be for any given level of competence" (Lawton, 1985, p. 508). Familiarity, belonging, social networks, the natural and built environment, and community attachment contribute to the resources that are needed to successfully age in place. Space becomes *place* when meaning is given to a location, often through frequent everyday experiences, social ties, and life events. Place can continue to serve as an anchor of identity in adulthood (Hay, 1998) and therefore contribute to as sense of well-being. Phillipson (2007) described "elective belonging" where people seek to live in places that reflect their identities and preferences (p. 330). In creating place attachment, the quality and intensity of experiences that developed memories and shared meaning is more critical than duration in a location alone. Nonetheless, place attachment often comes with a long connection to a location.

Attachment to place is reflected in the widespread desire to age in place and to remain in one's longtime home or community despite declines in health and cognition. However, the ability to maintain P–E fit requires resilience of the individuals as well as conditions of their sociospatial environment. Today, there are a vast array of physical modifications, devices, electronic health monitoring, and personal care services that make aging in place more possible. However, the

broader community's ability to support autonomy while adjusting for vulnerability is more than the sum of these modifications.

For some, aging in place is an isolated and precarious existence. Poverty, poor health, limited social networks, and lack of services are barriers to resilient aging. In particular, rural environments may present challenges to service delivery, given that there are fewer services and geographical distance may create barriers to what few services do exist. Recognizing that some elders do not have the option to remain in their homes, Golant (2011a) presented a much broader view of what aging in place means to include NORCs, cohousing, elder villages, and those with even more supportive services such as assisted living and continuing care retirement communities. Aging in place in Golant's model refers to a living environment in which the older person feels competent and in control despite functional limitations. Thus, the goal is to construct both physical and social environments to support resilient aging across the spectrum from independent living to supportive care. Unfortunately, this may assume financial resources that are not always available. The experience of being old depends on individual characteristics, the resilience and resources of their community, and policy initiatives such as Age-Friendly Cities that provide institutional guidance based on input from local communities. Viewed transactionally, efforts on multiple levels to promote the resilience of elders may also promote the health of communities. Similarly, healthy communities may be more able to support the quality of life of our aging population. Resilience is about relationships and the shared social capital of family, friends, and neighbors. Reaching out, making connections, and engagement is implicit in this approach to resilient aging.

POSITIVE PSYCHOLOGY AND RESILIENCE IN LATE LIFE

The recent field of positive psychology also focuses on positive adaptation, but uses different constructs that are nonetheless relevant to resilient aging—namely mindfulness, wisdom, and compassion, including self-compassion. As we shall see, this field within psychology also takes an individualistic approach to positive adaptation, but an ecological model may be more appropriate to the role that these characteristics play in resilient aging. Thus, mindfulness, wisdom, and compassion reflect transactions between individuals and their environments, which may prove to be mutually beneficial.

Mindfulness

There have been more than 1,000 studies of mindfulness and well-being published in the past few years (Levenson & Aldwin, in press). The term *mindfulness* has been used in two ways. The first can be considered *utilitarian* mindfulness,

which is defined as the process of becoming aware of one's internal processes, including attention and emotions, in order to self-regulate and relieve distress from pain, anxiety, and chronic illness. However, in a broader sense, it is also a *developmental process*; Langer (1989) referred to mindfulness in a cognitive sense of being able not to get trapped by one's assumption system and be more flexible and open to new ways of thinking. In many contemplative religions, including Buddhism, Christianity, and Sufism, practitioners use mindfulness to cultivate awareness leading to self-knowledge, insight, the detachment from sources of suffering, and a greater openness to the sacred. Both of these forms of mindfulness are relevant to resilience in late life.

The incidence of chronic illness increases dramatically in late life and constitutes a major developmental challenge in later life. Clearly, being able to adequately manage the psychological and physical symptoms stemming from having a chronic illness that could result in disability and death is an important aspect of resilient aging. Langer (1989) showed that changing the physical and social environment to challenge the assumption of disability in late life can result in enhanced psychological and physical well-being. Langer and her students developed a "camp" for older adults designed to remind them of their environment in younger adulthood. Music and magazines from several decades ago, conversations about events from that time, and an encouragement for self-sufficiency resulted in dramatic improvements in just a few days, not only in psychological well-being but also in physical well-being such as gait and grip strength. Negative assumptions about what being old "must" entail may result in unnecessary limitations and disability and may even hasten mortality (Levy, 2009). Thus, it is not surprising that Allen et al. (2011) included mindfulness in their definition of resilient aging.

It is important to note that in this approach, mindfulness is not considered merely an individual characteristic, but rather was elicited through environmental manipulations. Both the physical and the social environment can be designed to increase mindfulness. Lawton and Nahemow (1973) cautioned that environments can be made too easy and can result in an increase in (mindless) dependency, which can lead to increased disability. In contrast, the "Green House" movement focuses on a physical and social environment that encourages the development of belonging, influence, and a sense of purpose even among impaired elders (http://thegreenhouseproject.org/mission).

Wisdom, Interdependence, and Resilience in Late Life

It is surprising that studies of resilience in late life have not, to our knowledge, considered wisdom. Although wisdom is commonly assumed to be a characteristic of late life, increases in wisdom with age have not been consistently

documented (see Staudinger & Glück, 2011). In part, the difficulty may lie in how one defines wisdom. It is generally accepted that there are two general approaches to wisdom: *phronēsis*, which can be defined as "practical" wisdom (Baltes & Staudinger, 2000), and *sophia* (or *sapienta*), which generally focuses more on "spiritual" wisdom or self-transcendence (Levenson, Jennings, Aldwin, & Shiraishi, 2005). Approaches that focus on wisdom as pragmatics or practical knowledge sometimes find that it is highest in midlife. Given the role of middle-aged adults as often high-level managers in both careers and families, it is not surprising that they would be involved in practical knowledge, procedural knowledge, life span contextualism, relativism, and the management of uncertainty, which are the five dimensions of practical wisdom. However, compassion and self-transcendence may be of greater importance in late life, as individuals cope with new, often health-related limitations and changes in their old level of functioning.

How do mindfulness and wisdom contribute to resilience? We argue that they are key elements in the process of positive adaptation across the life span. Mindfulness provides the cognitive flexibility and self-awareness necessary for coping with new and difficult problems. Further, wisdom can develop in the context of coping with stress (Glück, Bluck, Baron, & McAdams, 2005) and is associated with SRG (Jennings, Levenson, Aldwin, Spiro, & Mroczek, 2006), and thus can be considered a type of GRR, which help individuals (and their communities) navigate in difficult times.

Wisdom as self-transcendence is defined as *decentering* from the self—that is, being able to put larger interests ahead of one's own. In a cross-cultural review of philosophies and religions, Curnow (1999) identified four common components of wisdom: self-knowledge, nonattachment, integration, and self-transcendence. Levenson and Aldwin (in press) argued that these four components of wisdom reflect a developmental process that is based on mindfulness. Self-knowledge provides the basis for understanding our selves and what we are attached to. Nonattachment does not mean uncaring, but rather the flexibility to step back from our desires. Integration is based on understanding what those desires are and reconciling intrapersonal conflicts. These then provide the basis for transcending the self.

Although wisdom is thought of primarily as an individual characteristic, both the pragmatic and transcendence approaches are highly contextual and cultural. Baltes and Staudinger (2000) distinguished between cultural aspects of wisdom (e.g., its transmission through proverbs and the ability to negotiate in one's culture) and personal wisdom. Even within the personal wisdom traditions, the community provides an important avenue for the development of wisdom. In Buddhism, the three pillars are Buddha (enlightenment), Dharma (truth), and

Sangha (community). Within the Christian monastic tradition, Levenson and Aldwin (2011) found that nuns were very clear about the importance of their communities in their spiritual development. Compassion is an important partner of wisdom, and thus wise individuals are expected to contribute to their communities, help individuals with their problems, provide role models, and help the larger community to solve problems.

IMPLICATIONS FOR PUBLIC POLICY

Finally, we will illustrate the implications of our model for public policy concerning health in late life. The scientific and medical community is justifiably concerned over the epidemic of obesity and Type 2 diabetes, not only in America but also in many countries around the globe. This epidemic threatens to reverse the salutary increases in functional health and longevity seen in the past few decades and bankrupt national health care systems. Reversal of this obesity trend will require changes at the individual, community, and larger sociocultural levels.

At the individual level, a diagnosis of diabetes can be seen as a stressor for which individuals have to learn new coping strategies. An increase in body mindfulness—that is, attentiveness to symptoms of low or high blood sugar—can be useful for individuals to learn to regulate their blood sugar. They must also learn to change their health behavior habits (e.g., diet and exercise patterns), which hopefully will change into ongoing management strategies to maintain blood sugar levels and avoid crises (flexible adaptation). This new attention to diet and exercise may lead to better overall health behavior habits (GRRs), which may be made more probable for those with high levels of individual resources (intelligence, income, and education). They must also develop new levels of patience with and compassion for themselves and others suffering from disability in late life.

On a contextual level, immediate support from family and friends, as well as from medical professionals, may help individuals with the development of these GRRs, or they may hinder them. For example, if the spouse or partner adapts a low glycemic index diet and exercise habits, this will help the patient with diabetes adhere to a healthier lifestyle. But if one's partner (or favorite aunt) insists on sharing high caloric treats, or if the school or workplace only has cookies and candy in vending machines, this may create difficulties in diet adherence. Medical professionals can provide help not only with information about the disease and the importance of regulating blood sugar to avoid diabetic neuropathies, high blood pressure, renal failure, blindness, and dementia, but also with practical advice such as foot care and changes in cooking practices. Extension services from land-grant universities have developed several programs along this line for patients with diabetes and their caregivers. In turn, as individuals learn

to develop coping and management strategies that work for them, they can share these with their friends and relatives, contributing to better adaptation for others as well.

On the sociocultural level, much is being done to create better blood testing technologies and medications such as insulin pumps. Changes in public policy have led to supports such as needle depositories in lavatories, but more needs to be done to make affordable fresh fruits and vegetables available to school children, nursing home residents, and inner city residents, as well as safe public places to exercise. Environmental design can encourage pedestrians and discourage the use of private transportation, and so on. Public policy should not only concentrate on older individuals with diabetes, but should also include prevention efforts targeted to children and adolescents. These changes in public policy, however, will only occur as individuals develop collective coping strategies to change the culture. Thus, fostering resilience at the individual level benefits the community and the larger sociocultural context. It also requires changes at all three levels, as well as understanding the transactions across all them.

Thus, an ecological model would make three general recommendations.

1. *Relationships*. Resilience is about relationships, and relationships are experienced as a series of interlinking cores and peripheries on a micro and macro level. We must move from a tendency to identify problems and create interventions focused primarily on individuals, and broaden the framework to include families, neighborhoods, and communities. Interventions can be strengthened when informal arrangements of naturally occurring relationships are acknowledged by and supported through policy.
2. *Enablement of all ages*. WHO's Age-Friendly Cities philosophy encourages the enablement of people of all ages. Policies can encourage the development of social and built environments that are oriented to nurturing, as well as challenging, individuals and families across the life course. Communities that can encourage a range of civic engagement and belonging for all ages will increase the strength of its members and networks. Images of successful aging must grow beyond the confines of doing in old age what you did in your youth, and conversely, youth need not wait until they are "grown-ups" before being viewed as contributors.
3. *Social capital*. Encourage social interactions and civic participation within communities to build community cohesion and social capital. A sense of community and attachment to place develops individuals with necessary local knowledge. Mindfulness of individuals should also be seen as a form of social capital. Engagement in something beyond oneself and for the greater good, the community is a form of self-transcendence and most effectively grows out of mindfulness at the individual level.

Thus, resilience is a process that involves more than the individual. Luthar (2006, p. 780) stated, "Resilience rests, fundamentally, on relationships. The desire to belong is a basic human need, and positive connections with others lie at the very core of psychological development; strong, supportive relationships are critical for achieving and sustaining resilient adaptation." Both the physical and the social environments are key to the development of resilience. However, resilience is not a mindless conformity to dicta of the social environments, but rather involves a dyadic interdependence. Thus, for communities to promote resilient aging, we must provide not only adequate support in the physical and social environment to promote environmental competence and aging in place, but also recognize the contributions that older adults make to their families and communities.

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CHAPTER 7

Spirituality and Aging

Cognitive, Affective, and Relational Pathways to Resiliency

Janet L. Ramsey

ABSTRACT

Although the current status of empirical work in religion and aging is often atheoretical, contradictory, and underdeveloped, gerontologists are increasingly acknowledging a constructive role for spirituality in the lives of older adults. An understanding of the diverse ways that religion helps older person cope and grow in the face of multiple losses is necessary for both researchers and practitioners, because cognitive, affective, and relational aspects of spirituality are all part of the complex picture of this aspect of resiliency over the life span. Preferences related to gender, culture, and denomination are also crucial for understanding and encouraging this form of resiliency. Recent empirical work and theorizing have identified, as examples of the multiple pathways to spiritual resiliency, meaning making over time; imaginative use of the arts; optimization of positive affect; the ability to reframe losses; mature and emotionally rich relationships with self, others, and the Divine; the ability to grieve and to forgive; and, most importantly, rootedness in a healthy spiritual community. The author concludes by calling for additional integration of neuroscience in religion and aging and for going deeper theoretically and theologically.

INTRODUCTION

All older adults experience a combination of daily difficulties and extraordinary traumas before reaching the last third of life, yet many people not only survive, but thrive, in the wake of life's challenges. Others are almost overwhelmed by them. Against ageist stereotypes, most old and very old are not depressed and dissatisfied, even while experiencing multiple changes, risks, and decreased personal control. The seriousness or duration of past and present adversities does not account for variations in response to life's challenges, nor does chronological age alone (Waugh, Fredrickson & Taylor, 2008). Rather, the tendency to grow and to continue to live well after hardships is best understood as part of a powerful, diverse, and elusive human capacity—resiliency.

Resiliency

Each scholar with an interest in resiliency defines it differently. In this chapter, *resiliency* is understood *inclusively* as the tendency to resist, recover from, and be reconfigured by serious life challenges (Lepore & Revenson, 2006). The ability to thrive after difficult life experiences is both a process and an outcome, because competence to face the next challenge results, in part, from successfully living through those already past. Because older adults face difficulties over long periods of time, and in widely differing contexts, a definition of resiliency with both temporal and spatial dimensions (over time and space) is best suited for an older population.

Resiliency research began when practitioners and scholars noticed thriving children growing up in difficult environments. Only later was this term borrowed by those working in adult development, wherein different, yet equally serious, life challenges were likely. Both personality traits (Marcoen, 2005) and environmental (social) factors (Fuller-Iglesias, Antonucci, & Sellars, 2008) have been identified as contributing to resiliency in later life.

A careful definition of resiliency includes its distinction from a first cousin, "coping." Although theoretical and empirical work on coping (e.g., Faigin & Pargament, 2011) has important implications for the topic of this chapter, a subtle yet important distinction between resiliency and coping is implied by my broader definition. *Coping* can refer to reacting well to one particular life event alone, but a temporally and spatially sensitive definition suggests a capacity manifested across time, at different life stages, and in a variety of personal and historic contexts.

Spirituality

Worldwide, religion offers resources that enable people to find larger frames of reference during times of loss and suffering (cognitive meaning making), imagine

better futures during a difficult present (retain optimistic emotions), and receive both actual and perceived support that mediates loneliness and despair (maintain meaningful connections to others and to God). Most persons in the current cohort group older than 65 years of age were educated in a religious tradition (Marcoen, 2005), and many of these elders continue to participate in daily rituals, prayer and/or meditation, corporate worship, and charitable work.

Spirituality anchored in a traditional community where members assume the existence of God, is a theistic spirituality (Marcoen, 2005). However, in-depth spiritual experiences also exist outside institutionalized religion, and some elders describe themselves as spiritual but not religious (Marcoen). Although religion and spirituality are closely related constructs, the term *spirituality* includes persons with less traditional approaches to encountering the deeper dimensions of life, such as those outside formal religious organizations. For both traditionalists and nontraditionalists, however, spirituality suggests a dynamic, lived, imaginative experience that is larger than one's self.

Scholars working in religion and aging must begin by defining the term spirituality as applied to their particular context and time. In much writing in religion and aging, spirituality has been defined in individualistic terms, for example, as "an inner, subjective region of life that resolves around individual experiences of being, transcending the personal self, and connecting with the sacred" (Atchley, 2008, p. 12). In this chapter, for purposes of integrating and reviewing a wide range of writing and scholarship, I employ the term spirituality broadly to refer to cognitive, affective, and relational experiences, both individual and communal, that are interpreted as self-transcendent.

Although spirituality can also be understood as a work or personal quest, spiritual pathways to resiliency often develop out of, and are expressed within, a communal context (Koenig, 2000; McFadden & Ramsey, 2010; Ramsey & Blieszner, 2012). Spiritually based relationships are more than social support and include spiritual support (Faigin & Pargament, 2011) that is perceived to be given by both other people and by God. Healthy, community-based spirituality does not, however, mean becoming completely engulfed in a group or passively accepting all the beliefs and practices of a particular faith tradition. Rather, resilient older adults appear to have found wisdom and comfort in retaining a critical, almost outsider status, while simultaneously recognizing their spiritual solidarity with others (Ramsey & Blieszner, 2012). If, on the other hand, older adults are unable to be critical of toxic religious beliefs and attachments, spirituality can detract from resiliency rather than enhance it (Faigin & Pargament).

Perhaps because of the surprising, even mysterious, nature of human strength in general, researchers and writers have often found formal definitions inadequate and have created metaphors to portray resiliency. These include a

bouncing rubber ball (Humphrey, 2008) and a tree blowing in the wind (Lepore & Revenson, 2006). Similarly, scholars of spirituality and resiliency have created metaphors to point the strength that arises from spiritual pathways, including a lifelong journey or quest (DeMond, 2010), a diverse yet harmonious symphony (Ramsey & Blieszner, 2012), and an interwoven web of human connectedness (Ray & McFadden, 2001).

Spirituality, Religion, and Resiliency

Growing out of a negative interest in religion (by psychoanalysts and by scholars in the psychology of religion) in which religion was typically viewed as one defensive mechanism among others or as a method of sublimation or projection, scholarly interest in the spiritual dimension in psychology is relatively recent. Gradually, gerontologists acknowledged a constructive, even unique, role for spirituality in the lives of resilient older adults, persuaded by the citing of religion from elders themselves (Gallup Poll, 2006; Ramsey & Ramsey & Blieszner, 2012; Blieszner, 2000; Schwarz & Fleming Cottrell, 2007), by growing emphases on meaning making (Neimeyer, 2001) and identity construction (Sinnott, 2009), and by a variety of topics within newer academic territories such as positive psychology, narrative therapy, and spiritual development. The shift from theories *of* aging to theories *in* aging (Turner, 2003) has also, albeit indirectly, encouraged this new emphasis by creating room for attention to topics historically understood as belonging solely to the discipline of religion, such as late-life wisdom, forgiveness, and hope. A more nuanced understanding of resiliency's complex pathways allows for attending to an aspect of life that older adults often cite as a source of strength—spirituality.

In spite of this growing interest, however, the current status of empirical work in religion and aging is often atheoretical, contradictory, and underdeveloped. Like much research in gerontology, religion and aging research remains "data rich and theory poor" (Birren, 1999). Perhaps in response to lingering resistance to cross-disciplined research within psychology in general and to a continuing determination to be scientific in gerontology, quantitative studies have often lacked theoretical and/or theological depth, and qualitative studies have suffered from methodological confusion, such as that posed by cohort, cultural and denominational differences, and by differences between genders (see Recommendations section in the following text).

In this chapter, I review some of the most promising recent work in the area of aging, spirituality, and resiliency, with a view to summarizing and systematizing emergent themes. I will also argue, after Moberg (2001) that too often in this area of scholarship, only one pathway to religiously based resiliency has been emphasized, without sufficient acknowledgement of the diversity and

complexity present when spirituality is present. Throughout this chapter, I organize my review around three chief categories that emerged from my analysis of the current literature: cognitive, affective, and relational. I close by suggesting implications of a more nuanced and complex view of spiritual pathways to resiliency for both researchers and practitioners.

COGNITIVE PATHWAYS TO RESILIENCY: THE NEED TO MAKE MEANING

Even before resiliency was used as a word to describe human strength, gerontologists with an interest in aging and religion (as well as those working with critically ill persons) observed the search for meaning that occurs in the process of life review (e.g. Moberg, 2008), particularly during the last third of life. Asking deep questions during this period is hardly surprising, because for many older adults, what is measureable and observable may no longer be adequate to respond to the existential questions they face. Elders may no longer care about *what* has happened to them so much as *why* these events occurred, and they wonder how to place the important events in their stories into a larger, coherent narrative. This process creates imaginative space for both scientific and spiritual categories. Not surprisingly, some scholars (e.g. Silberman, 2005) have suggested that religion is best understood as a cognitive (meaning making) process alone because this aspect of spirituality seems particularly illuminative in understanding the relationship of spirituality to resiliency. This emphasis on cognitive aspects of resiliency and spirituality is consistent with themes frequently explored in the aging literature, including wisdom (Sternberg, 1990), life review (Butler, 1974), the illusion of absolute safety (Gould, 1978), gerotranscendence (Tornstam, 2005), and the notion of a participatory response to death (Kastenbaum, 2000).

Of particular note is the work of gerontologist Melvin Kimble (2001), who has adapted for the study of aging and religion the concepts of Jewish psychiatrist and death-camp survivor, Viktor Frankl. Frankl's logotherapy was concerned with looking at the meanings of suffering throughout life. As a result of horrific experiences that included the loss of most of his own family, Frankl believed that it is by means of reflecting on suffering that human beings are best able to prioritize what we value and find important for the remaining years. He was convinced that people can choose, in any situation and at any time, to make meaning out of suffering. A student of Frankl, Kimble wrote, "the crisis of aging appears to be a crisis of meaning" (p. 14). Kimble believed that the task of the later years is a cognitive one—namely, making sense of one's experiences, precisely during a time when so much is changing and losses are quite bewildering in their "frequency and intensity" (p. 14).

Kimble's work has had far reaching impact in gerontology and religion, because the search for a meaningful life in the older years is often viewed by many working in religion and aging as primary shaper of the later years, as the "most important support" (McFadden & Kozberg, 2008, p. 8). In the face of numerous physical and social losses, as well as amidst the personal trials of an ageist society, older adults (all of whom are survivors in the larger sense) often raise "why" questions that require spiritual strategies for resisting meaninglessness. Questions about human suffering, about the purpose of one's life, and about what will occur after death go beyond scientific explanations and require instead a "formative narrative" (McFadden & Kozberg, p. 6) that is provided by the stories and symbols of a religious tradition or found through one's own spiritual seeking.

As part of the process of wrestling with questions of meaning, there are two cognitive steps not always recognized. First, there is the courageous act of raising honest questions, naming the harsher realities of life in order to call something what it is. A healthy and mature spirituality can assist older people precisely in this process of naming reality; for example, for those in Jewish and Christian traditions, reading scripture such as the Psalms or the Book of Job provides language for the truth(s) of the human situation. Secondly, meaning making involves a process of resetting one's priorities. This involves lifelong work to discern what matters most and what matters less or none at all. This is, of course, often most obvious in retrospect; as elders review their life stories and recognize the errors and successes, the necessary losses and the imperfect gains along the way. Here again, religious beliefs and practices provide not so much answers, as moral guidance, words of divine forgiveness, and historic perspectives. Resiliency is enhanced when elders find the strength to rearrange the events of the past, present, and future, so that what is ultimately important can be placed at the forefront of one's life stage and what is penultimate can recede into the background. Both of these cognitive pathways to resiliency are clearly a lifelong spiritual project, one closely related to what is called wisdom in both religious and secular literature.

Narrative Pathways: The Temporal Dimension of Meaning Making

Because time is central to the psychological experience of growing old, a more fluid understanding of reality itself is helpful in discerning how older adults engage familiar religious categories and language to find and to create meaning. Both life span and narrative theorists agree that studying older adults as though they are frozen in time and had no youth (a snapshot approach) is ultimately inadequate. With its emphasis on the ways that personal accounts and stories function in people's lives, narrative theory provides a "root metaphor" or "heuristic" (Kenyon & Randall, 2001, p. 3) for gerontology, one that is particularly at home

with spirituality, resiliency, and aging. Through narrative methods in both clinical practice and empirical research, the spiritual dimension of particular life events can be discerned within the telling of daily life experiences, or through deeper reflecting on those events.

Ramsey and Blieszner (2012) used life span theory, narrative methodology, and Tillich's theological categories to gather and analyze data in a cross-cultural, denominationally specific (Lutheran), qualitative research project that analyzed the narratives of "spiritually resilient" older adults in the United States and Germany. After conducting focus groups in both countries, we selected 16 elders (four women and four men from the United States, and equal numbers from Germany) to participate in in-depth interviews that were then theoretically coded and analyzed. The "spiritual nominees" (similar to Paul Baltes' "people nominated as being wise"; see Baltes, Staudinger, Maercker, & Smith, 1995) interviewed for this study were viewed by clergy and peers as being spiritually mature persons who were resilient because they had survived and grown after serious life challenges and/or traumas. In addition to the usual changes of aging, the lives of those who participated had been dramatically impacted by World War II, some having lost family members, others having traumatic experiences while members of the military. The importance of being anchored in a spiritual community, yet remaining imaginatively involved in one's religious life, emerged as a central theme in the narratives of both genders. There were also noticeable gender preferences (see the following text) and paradoxical tensions in the narratives that suggested a complex and multifaceted spirituality.

Resiliency, Religion, and the Arts: The Numinous Dimension

Meaning making is not exclusively a rational process, and bringing spirituality and aging into conversation with the arts can also provide new perspectives for both disciplines. The metaphor of a spiritual journey (Bianchi, 1984), along with a relational emphasis on artistic creations and experiences (McFadden & Ramsey, 2010), point to a dimension of human experience that can be most powerfully accessed through literature, music, and visual arts. For example, McFadden & Ramsey (2011) explored resilient caregiving by analyzing *Iris*, a 2001 film that portrayed the marriage and caregiving responsibilities of John Bayley, spouse of Iris Murdoch. The resiliency Bayley displays in this film was obviously anchored in his love for his wife, who suffered from dementia, but also in his love for her artistic gifts as a novelist and essayist. The "anxious cries" of his heart reflected both his personal and spiritual struggles, as he reviewed their life together and attempted to prioritize what mattered and why events had occurred as they did. Bayley's story suggests that the arts, which often include transcendent religious symbols and practices, can aide in coping with the challenges of the later years, including caregiving and life review.

AFFECTIVE PATHWAYS TO RESILIENCY:
POSITIVE YET COMPLEX EMOTIONS

Although optimization of positive affect is often cited as an *outcome* of spirituality, emotions are not consistently viewed as *pathways* to resiliency. Furthermore, optimization of positive affect is not a naive denial of life's struggles, a determined effort to see life through rose-colored glasses. Rather, as Labouvie-Vief, Diehl, Jain, and Zhang (2007) suggested, a richer life requires tolerance for the complex and often disturbing tension between joy and sorrow.

Recently, Schwarz and Fleming Cottrell (2007) quoted a research participant who referred to her positive feelings as part of the spiritual support that enabled her to cope with difficult times. Similarly, Ramsey and Blieszner (1999) found that for older German and American women, affective expressions were a core aspect of the faith that sustained them during times of war, health crises, deaths of family members, and other serious losses.

There may be gender preferences (in both research participants and in the scholars who study them) that help to determine whether spirituality is described in exclusively cognitive terms or as also including affective and relational components. Older adults of both genders can obviously have deep feelings about their relationships with the Divine, and as part of their experiences within a religious community. However, women appear to be more ready to use emotional language in telling stories of how spirituality helped to sustain them during crises—perhaps, in part, because women tend to respond with more words than men in answering questions about aging well (Stark-Wroblewski, Edelbaum, & Bello, 2008). The reasons for this apparent gender preference remain shadowy, but some scholars believe that a readiness for emotional expression may be a biological predisposition that is then overlaid with culture (e.g., Rossi, 1985).

Affective Pathways to Decreased Anxiety

The approach of death, coupled with a loss of control during the last days of life, can easily lead to anxiety and anger. Spirituality is one pathway among others that appears to mediate end-of-life anxiety by allowing older persons to remain peaceful, even when facing their own death and losing personal control. Terror management theorist Tomer (1994) suggested a positive relationship between high self-esteem and reduced death anxiety. This may help to explain why some persons involved in positive, affirming experiences in a religious community have a less intense fear of death (Ramsey & Blieszner, 2012; Ramsey & Blieszner, 1999). Kastenbaum (2000) cited research that appears to confirm this relationship, but hypothesized an either/both possibility that includes the importance of "reassuring sociocultural constructions of life and death" (p. 138). It is possible that both the complex process of meaning making described previously and

affective experiences based on healthy self-esteem serve as fortifications against troubling death-related concerns and fears.

Scholars who conducted a research project with HIV positive older gay men found "overwhelming evidence" (Brennan, 2008, p. 59) that spirituality leads to increased resiliency and creates the ability to cope with impending death, in spite of the stigma some gay men experience within their communities. Similarly, Hughes et al. (2004) found that spirituality lowered anxiety and provided both emotional and instrumental support in hospitalized cardiac patients, and McCallum and Yarry (2008) found spirituality to be a growth factor for stressed African Americans, related to their strong beliefs in an afterlife.

Resiliency and Hope

Although positive psychology typically refers to "optimism," "hope" is perhaps a term more suitable for research and writing on resiliency, aging, and spirituality. Hope points toward a better tomorrow, but also suggests a spatial component, and can be envisioned as a kind of "territory" (Flaskas, McCarthy, & Sheehan, 2007, p. ii), leading away from the no-man's land of despair. Life span theory emphasizes a pattern of gains and losses throughout life, both developmental and situational (Baltes, 2005), and resilient elders do not deny the vulnerability they share with all human beings. When losses and suffering accumulate, as they tend to do for the oldest and frailest elders, discovering a reason to hope is crucial. Because they point to a higher reality and a larger purpose, spiritual beliefs and practices can lead to hope that transcends difficult, even tragic, present realities.

Ramsey and Blieszner (2012) found that the spiritually resilient adults in their group of participants were able to hold together a mature acceptance of life's realities with a sense of hopefulness. The ability to balance hope with the challenging realities of later life did not occur overnight for either the men or the women in this research project, but appeared to be an aspect of resiliency arising from a long life anchored in a religious community. Within the Christian metanarrative that these older adults heard and internalized, hope is both a theme and a shared value. In narrative terms, they believed in a future story that points beyond the present.

Resiliency and the Ability to Grieve

Although seldom acknowledged as part of the process of recovery and repair, being able to grieve one's losses has long been acknowledged by mental health workers as a crucial aspect of human strength. All spiritual traditions provide symbols, language, and norms for grieving that give meaning to, and structure, the grieving process. Islam, for example, has carefully proscribed rules for how long one must grieve, and Jews and Christians have scriptural resources, such

as the lament Psalms, to console them at difficult times. Spiritually based groups also help grieving persons to place their current loss within the larger framework of the community's experience, and thus mediate the experience of acute loneliness that often follows the death of a partner or close friend.

Anticipatory grief is also facilitated with spiritual practices, such as last rites for those facing death, and through the diverse forms of spontaneous and formal prayer offered up for both dying persons and their families. After death has occurred, spiritually oriented support groups can help persons gain (or regain) a sense of personal meaning and hope for the future, thus resisting despair. Communal worship, especially for older men, may provide a safe and intimate space for emotional release, even for those who have been carrying their hurts and grief unspoken for many years (Ramsey, 2001).

RELATIONAL PATHWAYS TO RESILIENCY: BALANCED CONNECTIONS TO GOD, SELF, AND OTHERS

Evidence has been clear for some time that social relations facilitate resiliency in late life, and that, to varying degrees, both the size and quality of one's social network are associated with better psychological health and higher life satisfaction (Fuller-Iglesias et al., 2008). Kahn and Antonucci (1981) created a convoy model to describe how, as psychological well-being and health vary over the life span, social relationships also change in ways that are "dynamic and multifaceted" (Fuller-Iglesias et al., 2008, p. 184).

Social relationships also lessen fear. As noted previously, reduced anxiety is consistently associated with better health outcomes and with improved quality of life, suggesting that low levels of anxiety are crucial for the development of resiliency. The experience of having one's anxiety reduced by positive relationships with others is confirmed by both everyday experience and by research findings (e.g., Hughes et al., 2004). We satisfy our strong need to be intimate with other persons, often without much conscious attention, through a combination of brief interactions and through ongoing deeper relationships.

However, social support alone may not be sufficient to explain why some elders find that close engagement in a spiritual community is such a powerful pathway to resiliency (Koenig, 2000; Faigin & Pargament, 2011, Ramsey & Blieszner, 2012). Within a spiritually based community, there exist both practical and emotional support, but also beliefs, shared symbols, common practices, and a metanarrative that lead to perceptions of being upheld—upheld by more than a series of individual relationships. Markides and Cole (1984), for example, found that within Mexican American families, both church attendance and religiosity were significantly correlated. Clearly, in some cultural groups, and despite

extra familial influences, the family remains an important vehicle through which religious behavior and attitudes are transmitted, suggesting an intergenerational component to spiritual resiliency. At the most obvious level, groups with a spiritual basis offer elders increased social opportunities, and therefore more chances to meet friends and partners with whom intimacy might develop. This is true for all ages, but older persons may feel more comfort in a church or synagogue than in other social settings. Because most persons attend one congregation for many years, there is also an ongoing friendship circle within, which one is and has been known and affirmed over time. However, congregations also have rituals—social and religious—that provide comfort, meaning, and familiarity. This combination of longevity, meaning making, place familiarity, and safety make it more likely, although certainly not inevitable, that an older adult's participation in a religious group will lead to deep, supportive, and intimate social relationships.

Unhealthy Religion

Healthy religious engagement does not, however, mean engulfment in a group; it does not include losing one's own ability to think and reason. Although the tendency to engage in mind-controlling cults is not some hard-wired, brain-based tendency, it does reflect a basic human need to establish oneself in a subgroup with shared beliefs and values (Galanter, 2005). When spiritual beliefs are part of an overly intensive, emotionally manipulative group experience, they can distort mental functioning and lead to negative outcomes, rather than to resistance, recovery, and reconfiguration. "Voodoo death" is an extreme example of the negative impact of spiritual beliefs and rituals, even on bodily functions. Another is thought control, which leads to diminished personal autonomy and to setting aside basic human values (Galanter).

When, with mature spirituality, there is a balance between attachment and individuation, the possibility exists for maintaining a tension between group membership and one's own self development. Marcoen (2005) has written elegantly of this tension, calling it "the search for the realization of oneself and the connectedness to the non-self, in the context of a sensitive openness to the transcendent reality that encompasses all existence (God, the Divine, the Ultimate Reality, Nature, the Cosmos)" (p. 366). He envisions the spiritual life as a kind of internal dialogue in which one is both authentically grounded as a self, yet nurtured for action by "rituals, prayers, meditation, and contemplation" (Marcoen, p. 366). Similarly, Ramsey and Blieszner (2012) used theologian Paul Tillich's categories of individuation and participation to theorize on the paradoxical tension they observed in the stories of spiritually resilient Lutheran elders—between gratitude for spiritual community and the courageous ability to critique the beliefs and practices of that very community.

When this healthy balance is maintained, relationships and resiliency form a two-way street. As people develop more wisdom through their lifelong relationships with others, they also contribute to the resiliency of others, bringing "spirituality increasingly and more unobtrusively to bear in social relationships" (Atchley, 2008, p. 14). Some scholars use the term "gerotranscendence" (Atchley, 2008; Tornstam, 2005) to label the mature shift that gradually occurs after middle age (and particularly after 70 years of age) such that certain people become less materialistic and self-centered, and more philosophical and spiritual. This theory is particularly interesting because of the active roles these scholars imply for elders—keepers of the traditional values and mentors to the young.

As introduced previously, attachment patterns and everyday relationships with other people and with God can be negative as well as positive, and evidence exists that older adults whose views of the Divine are focused on a punitive and legalistic vision, do not find spirituality to be a positive pathway to resiliency. Rather, religion becomes a detrimental aspect of their lives (Faigin & Pargament, 2011), causing distress and leading to negative outcomes. Thus, as Faigin and Pargament urged, it is important to consider "both sides of the religious experience" (p. 165) in order to integrate spirituality into models of resiliency with sufficient caution.

RECOMMENDATIONS FOR FUTURE RESEARCH AND THEORIZING

In recognizing the presence of spiritual resiliency in the stories of many older adults, it is important to be cautious about drawing conclusions about either directionality or causality. It may well be the case that resilient persons are more spiritual as well as vice versa. Furthermore, because this source of resiliency is far from universal among the older adult population, facile conclusions about both its origins and frequency are premature, awaiting future research that is progressively sophisticated, both theoretically and methodologically.

Integrating Neuroscience, Going Deeper Theoretically

As work in religion and aging matures, it is likely that two very different, and largely overlooked, streams of research and theory will become more widely used—neuroscience and narrative. First, scholars in spirituality, resiliency, and aging have largely overlooked the simple fact that all thinking, including that which is spiritually focused, occurs within the physical context of the brain. Galanter (2005) reviewed experiments that confirm that we employ all of the inner workings of our brain to interpret our experiences, such as the experiences of an aroused person in a crowd. Thus, intense experiences in groups can be

interpreted as either transcendence or as anger, depending on the social input that surrounds the experience. Galanter also described how cognitive science sheds light on understanding the ways that our emotional needs can be met by spiritual experiences, such as a compelling church service (cf., Ramsey, 2001). These experiences become ingrained in memory and can be recalled in the future (as a resiliency resource) to "trigger a complex set of spiritually oriented ideas and feelings" (Galanter, 2005, p. 37). Work in neuroscience also has implications for specific spiritual practices, such as prayer and meditation, and could be studied intentionally by gerontologists with an interest in spirituality and resilience.

Because human behavior is the joint expression of biological-genetic and cultural-societal processes and conditions (Baltes & Singer, 2001), neuroscience alone, without attending to culture and experience, lacks sufficient explanatory power. However, this emerging area of emphasis has an increasingly important place as one way, among others, to understand how resiliency is formed and nurtured in human beings.

In theoretical work, narrative concepts have unique benefits for work in resiliency, religion, and aging. Not only does narrative include the temporal dimension, it provides imaginative space in which elders can explore questions of meaning, create more positive emotions through restorying, and move into their unknown futures. For practitioners, this might mean becoming better acquainted with narrative family therapy and integrating spiritual pathways to resiliency within that modality. For scholars with an interest in empirical and/or theoretical work, narrative theory, such as that of Dan McAdams (1993), can suggest ways in which people are not so much the authors of their own stories as created by them. One particular term McAdams popularized is the *imago*, the self-myth, a term that describes how persons organize self-narrations around particular roles (e.g., victim or survivor; villain or hero). This concept provides understanding of why a resilient older adult, going through a grief experience, could imagine a future where she lives out a preferred role, such as the strong survivor (Ramsey & Blieszner, 2012).

Attending to Diversity

Beyond a call for these two potentially rich ways to work in spirituality and resiliency, I also call here for work that is more sensitive to diversity—diversity of culture, faith group, and gender. Much of the methodological confusion (and perhaps many clinical missteps) has resulted from ignoring the tremendous differences in the spiritual preferences of diverse older adults.

Cultural differences include the importance of recognizing the high levels of individualism in Western thought, including in our theorizing and research on aging, faith, and resiliency. In many parts of the world, resiliency itself is

understood communally, and religion is a social phenomenon. Research that assumes a privatized quest as normative is thus parochial and limited in its usefulness in our increasingly pluralistic world.

We also need a peripheral vision (Bateson, 1994) that allows us to begin with "an acknowledgement of strangeness, a disciplined use of discomfort and surprise" (p. 27) when we consider how persons grieve across cultures. For example, as Rosenblatt (2008) pointed out, the concept of recovery can be irrelevant or even misleading in understanding what goes on following bereavement across cultures. One group may encourage spiritual practices at the time of death that seem morbid and extreme to those from more emotionally controlled societies, whereas another may teach highly formal and affectively restrained rituals (Bateson). Yet both are potential spiritual pathways to recovery and repair; both provide what is needed to the resilient person in that cultural group.

Attending to differences within and across faith groups is also central to researching and theorizing spiritual pathways. Without understanding important theological nuances in belief, practice, and language of each older adult's group, qualitative interview schedules can be inaccurately developed, quantitative data inappropriately analyzed, and meta-analyses can be theologically uninformed. It is also easy to imagine how ignoring these differences can lead to confusing results when interviews and/or questionnaires are designed by a scholar from one religious tradition (or from none) and then given to participants from another. For example, it is helpful to be aware of theological nuances on topics such as good works, forgiveness, providence, and prayer.

Although it is possible that many gender differences are related to cultural stereotypes (e.g., those suggesting that men are less emotionally expressive than women), gender differences, at least in preference or in narrative emphasis, are another important variation that must be taken into account in research and theorizing on religion, resiliency, and aging. Recent studies appear to confirm gender variations; for example, a mixed method study of rural, Midwestern seniors found that women's resiliency included interpersonal relationships, "frame of mind" (Stark-Wroblewski et al., 2008, p. 367), and religion/spirituality as important contributors to successful aging. In the diverse population studied for this project, women fared worse financially than old men. The men's theme appeared to be take care of yourself, but the women tended to be other focused, a difference the scholars hypothesized could lead to better adaptation to age-related problems for the women, when increased dependency is likely. Overall, the women referred more often to faith and to activities with others, and to "community work" (p. 367).

Similarly, Ramsey and Blieszner (2012) found noticeable gender variations (which were understood more as preferences than as differences) in their cross-

cultural qualitative study. Again, relationality was a more dominant theme in the lives of resilient older women, along with the importance of affective expressions. The women talked more freely and easily about their feelings—religious and otherwise—than did the men, and they were comfortable relating emotions to their life stories and to their spiritual selves. The men and women in this study also used gender-related organizational strategies to narrate their life stories. For example, the men's stories revealed that the life of the mind was vital for both their communal practices and their personal, devotional lives. This tendency to critique and to be passionately invested in theological and political ideas appeared to enhance the men's resiliency. However, none of these narrative strategies imply that gender is best considered a sharp dichotomy; rather, it can be conceptualized as a preference or learned strategy for self-narration.

It is also imperative that scholarship in the area of spirituality, resiliency, and aging become more cross-disciplinary. Rather than ignoring the "spiritual interventions" (Faigin & Pargament, 2011, p. 175) that are already taking place by professionals in church, mosque, and synagogue, gerontologists would benefit from practicing a more holistic approach in their own research and writing. It behooves us to bear in mind that much of what we are researching in gerontology about religion and aging well has already been the focus of religious research and writing, to say nothing of the daily work of practitioners within spiritual communities, both lay and clergy, who tirelessly attempt to foster mature spiritual strength in the people they serve. I suggest that professionals working with older adults wonder together, across disciplines, how best to recognize and encourage spiritually based resiliency.

IMPLICATIONS FOR PRACTICE

Resiliency is a relatively new way to think in professional settings because traditional clinical treatment and casework with old adults tended to emphasize pathology, and thus practitioners responded to client distress by efforts to eliminate external stressors. In contrast, the development of resiliency focuses on strengths and even, at times, growth. It clearly requires attention to the internal work people do as they struggle with questions of meaning, hold onto hope, and attempt to make sense of their world after stressful events.

Resiliency offers a good fit for practitioners educated with a life span orientation because the wisdom of this paradigm permits them to avoid false dichotomies, including the two tensions explored previously, between the realities of growing old and the continuing potential for growth in the later years, and between close attachment to others and the need for one's own individuation. It is also compatible with the value system of many practicing gerontologists who

wish to encourage empowerment in older adults (e.g., in grandparents; see Cox, 2008), rather than inadvertently contributing to passive receptivity or victimhood in older persons. Finally, the language of resiliency works well for those who wish to include spirituality in their treatment plans because it provides conceptual room for both universality and particularity. Resiliency develops over time and space in the lives of persons who are quite ordinary, and thus there is a kind of simple magic that can be heard and encouraged in the ordinary stories of adaptation, survival, and growth that older adults tell us everyday.

A caveat, however, is important—no human story is a smooth trajectory of strength and growth. When the author of this chapter worked full time as a marriage and family therapist, I frequently charted a client's progress with a jagged line to demonstrate that although he felt low and discouraged today, the general direction was up—toward progress and recovery. Resiliency, including resiliency with a spiritual component, is like all human experiences, in that it varies greatly across contexts and across personal and historic time. Nevertheless, the slope is positive—resilient persons do recover and even grow—and practitioners who listen for signs of enduring strength will not ultimately be disappointed.

COMMUNITY AS A SOURCE OF
AND SUPPORT FOR RESILIENCY

I close by arguing that the importance of community to older adults must be addressed in religious gerontology as a corrective for an overemphasis on individual capacities alone. In contrast to implications found in contemporary self-help books, older adults themselves are more likely to mention other people, not cite their own personal strengths, as the source of their resiliency (Koenig, 2000; Marcoen, 2005; Ramsey & Blieszner, 2012). They see a profound connection between their ability to cope with personal losses and the resources they have been given, and the contributions they have made, as members of spiritual communities.

Clearly, human beings of any age need each other, need to *be* community together. In contemporary life, age groups are too often segregated, particularly in light of the ageism that surrounds us all. Bearing community-based spirituality in mind as a pathway to resiliency means encouraging intentional intergenerational activities that enrich the lives of seniors in families, in congregations, and in civic organizations, especially by decreasing internalized stereotypes. Even as it mitigates isolation, intergenerational engagement encourages people to celebrate rather than problematize differences across the ages.

For homebound and institutionalized elders, including those with dementia, community care can be created imaginatively, in different forms. These

special-needs adults should be included physically when possible and spiritually in more than a weekly prayer list. The frail and cognitively impaired old adults among us need visible signs of hope, personhood, and new life—gestures as simple as a hand-delivered bulletin from church, cards on their birthday, and visits by children from the community will foster their resiliency. Teaching congregational visitors basic skills for working with patient with Alzheimer—for example, validation therapy (Feil, 2002)—can also enhance elders' quality of life. As affective aspects of spirituality become better understood as contributing to the resiliency of older adults, perhaps a variety of tools for increased emotional engagement will be developed by both religious and secular caregivers.

For those caregivers in the medical community, including parish nurses, physicians, and social workers, knowing the importance of spiritual community as a resource for resiliency can help to prompt words and actions that distill anxiety and increase joy. An awareness of community as a resource reminds caregivers, both lay and professional, that they are not alone in their task and do not have to supply all the necessary encouragement and care. Accompanying older adults in the last third of life is, instead, a community task, and meaningful participation within a caring community can appropriately include many pathways to resiliency.

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PART 2

APPLICATIONS OF RESILIENCE IN DIVERSE CONTEXTS

These chapters focus on the application and value of resilience to a variety of issues key to successful development in a variety of contexts. Walsh understands resilience from a developmental family systems perspective, where resilience is discussed in the context of how some aging families are better able to adapt to age-related risks and challenges than other families that face similar adverse circumstances. Rybarczyk, Emery, Guequierre, Sharmaskin, and Behel review recent research on changes in resilience and indicators of adjustment during inpatient and outpatient rehabilitation with older adults following such adversities as stroke, falls, and other disabling chronic conditions, examining the role of resilience at different stages of the rehabilitation process for persons facing chronic illness and disability. Bonnano, Westphal, and Mancini centralize the role of resilience as a characteristic of individual differences in adaptive coping in the context of loss and trauma; complimentarily, they define a lack of resilience as maladaptive coping. Bonanno and his colleagues also discuss methodological approaches to elucidating the role of multiple influences on the diversity of adaptive outcomes in adulthood and later life. Sterns and Dawson explore career management and adjustment to retirement as a process centralizing the role of resilience in doing so. They specifically address career-related adversity that older works encounter and discuss several solutions for overcoming such barriers in the context of defining resilience at multiple levels of understanding. Coon discusses resilience as a characteristic of caregivers who adapt well to the demands of caregiving as well as seeing caregiving as a process that fosters resilience will be discussed, wherein caregiving in terms of dementia care and kincare are emphasized in the context of methodological advances that are necessary to move our understanding of resilience forward, and generalizations to other forms of caregiving are explored. Diehl, Hay, and Chui discuss the role of resilience in adulthood and later life in helping persons adapt to the stressors of daily life, stressing that age effects in reactivity to stress as well as its recovery are embedded in a multitude of interactive, complex variables. Lerner, Schmid, Weiner, Arbeit, Chase, Agans, and Warren consider the construct of biological and psychological resilience from a lifespan developmental perspective, centralizing the role of person-environment interactions in doing so. They address important questions regarding whether or not resilience that occurs for an individual earlier in the lifespan is related to resilience at later points in that person's lifetime, stressing the dynamic nature of the individual's relationship to a multi-leveled developmental system.

CHAPTER 8

Successful Aging and Family Resilience

Froma Walsh

ABSTRACT

This chapter examines the emerging challenges and resilience of families in later life, grounded in a developmental family systems perspective. It examines salient issues with retirement and financial security; grandparenthood; caregiving with chronic illness; and end-of-life challenges and the loss of loved ones. Core principles in a family resilience framework are presented. Clinical guidelines and case illustrations are offered to address common challenges and to encourage the potential for personal and relational well-being and growth in intimate, companionate, and intergenerational bonds.

THE IMPORTANCE OF RELATIONAL RESOURCES FOR RESILIENCE

Most resilience research and practice have focused on individual strengths in overcoming adversity. Notably, the positive influence of significant relationships has stood out across many studies (Walsh, 2003). Individuals' resilience is nurtured in bonds with others who are invested in their well-being, believe in their potential, support their best efforts, and encourage them to make the most of their lives. For resilience in later life, relational resources are especially important to counter stereotyped expectations of aging as inevitable decline and despair.

A family systems orientation considers the broad network of relationships, identifying and recruiting potential resources for resilience in the immediate and extended family. In fostering the resilience of aging family members, positive contributions might be made by siblings, adult children and godchildren, nephews, nieces, and grandchildren, even former spouses, and other informal kin and close friends. Even in troubled families, "relational lifelines" for resilience can be found.

A Family Resilience Framework

Beyond seeing individual family members as potential resources for older adult resilience, the concept of family resilience focuses on the family as a functional unit. Family resilience can be defined as the ability of families to withstand and rebound from disruptive life challenges, emerging strengthened and more resourceful (Walsh, 2003, 2006). Family resilience involves dynamic transactional processes that foster positive adaptation.

Major stressors or cumulative stress can derail family functioning, with ripple effects throughout the system. The family response is crucial: key processes for resilience enable the family to be proactive, rally in response to crisis, buffer stress, reduce the risk of dysfunction, and support optimal adaptation. For instance, how a family prepares for an anticipated loss, manages disruption, effectively reorganizes, and reinvests in life pursuits will influence the immediate and long-term adaptation for all members and their relationships (Walsh & McGoldrick, 2004).

The concept of family resilience extends theory and research on family stress, coping, and adaptation (Patterson, 2002). More than managing stressful conditions or shouldering a burden, it involves the potential for personal and relational transformation and growth that can be forged out of adversity. Members may develop new insights and abilities. A crisis can heighten attention to important matters, sparking reappraisal of life priorities and pursuits, and stimulating greater investment in significant relationships. Studies of strong families have found that through weathering a crisis together their relationships were enriched and more loving than they otherwise might have been (Walsh, 2006).

A family resilience framework can serve as a valuable conceptual map to guide interventions, strengthening key processes for resilience as presenting problems are addressed. This approach can benefit all family members and their bonds. As families become more resourceful, risk and vulnerability are reduced and they are better able to meet future challenges. Thus, building family resilience is also a preventive measure.

Ecological and Developmental Perspectives

Resilience involves the dynamic interplay of multiple risk and protective processes over time, with individual, interpersonal, socioeconomic, and cultural

influences (Rutter, 1987). A family resilience framework combines ecological and developmental perspectives to understand and strengthen families' functioning in relation to their broader sociocultural context and multigenerational life cycle passage. This transactional approach affirms varied coping styles and multiple adaptational pathways.

From a *biopsychosocial systems orientation*, risk and resilience are viewed in light of multiple, recursive influences. Family distress is seen in context: It may be generated by internal stressors such as coping with chronic illness, and complicated by external influences such as unaffordable health care. The family and social network; community, cultural, and spiritual resources; and larger social systems are nested contexts for nurturing and sustaining resilience.

A *family developmental perspective* considers adaptive processes in the multigenerational system as it moves forward over time. The traditional model of the family life cycle, with normative assumptions of an expectable trajectory and sequence of stages, does not fit most contemporary lives (Walsh, 2012). It also tended to stigmatize those whose life course differed from the standard, such as judging women who remained single or "childless" as having incomplete lives. Over recent decades, the landscape of family life has been changing dramatically, with increasingly varied family forms and gender roles, growing cultural diversity and economic disparity, and varied and lengthened life course expectations. Family and social time clocks associated with aging are also more fluid. As many become grandparents, others are beginning or extending parenthood, often in remarriages and through varied reproductive strategies. Our concept of "normal families" must encompass the broad diversity and complexity of households and relational networks (Walsh, 2012). An expanded family life cycle perspective affirms the wide range of options and life phases that makes each family unique. As individuals, couples, and families increasingly forge more varied and fluid life passage, their flexibility to adapt can better enable them to overcome adversity.

Family developmental processes for resilience involve mastery of life challenges and transitional stresses such as the following:

1. Families navigate varied pathways in forging resilience depending on emerging challenges and their resources to meet them. A pileup of stressors can overwhelm family functioning. Optimal family processes for resilience may vary with different demands. For instance, families need high cohesion in a medical crisis, yet need to shift to more separateness to adapt to the long-term challenges of chronic conditions (Rolland, 1994).

2. The impact of serious challenges varies with their timing in individual and family life cycle passage. In each family, the later life needs of

parents intersect with salient developmental issues of their children at their concurrent life phases. For instance, the challenges in caring for older adult parents differ for young adult children focused on emerging independence, career, and life partner priorities; for middle-aged children with heavy job and child-rearing responsibilities; or for adult children past retirement age, with limited resources and their own health concerns.

3. The convergence of developmental and multigenerational strains increases risks for complications. Past experiences of adversity can generate catastrophic expectations; yet resilient response can serve as a positive model in overcoming current difficulties.

Key Processes in Family Resilience

The family resilience framework presented here was developed as a conceptual map for practitioners to target key processes that strengthen family capacities to master stressful challenges (Walsh, 2003, 2006). Informed by social science and clinical research on resilience and effective family functioning, nine key processes for resilience were identified within three domains of family functioning: family belief systems, organization patterns, and communication processes.

Family belief systems powerfully influence how members view their challenges. Resilience is fostered by shared beliefs that increase options for effective coping, problem solving, and positive growth. Clinicians can foster facilitative beliefs by helping family members (1) make meaning of their challenges; (2) gain a hopeful, positive outlook focused on "mastering the possible"; and (3) draw on transcendent values and spiritual resources for inspiration and transformation. In family organization, crucial variables for resilience include (4) flexibility to adapt and reorganize, (5) connectedness for mutual support and teamwork, and (6) social and economic resources. Communication processes facilitate resilience in (7) clarifying problematic situations and options, (8) open emotional sharing and pleasurable interactions (humor/joy/respite), and (9) collaborative problem solving and preparedness to meet future challenges.

A family resilience orientation involves a crucial shift in emphasis from family deficits to family challenges, with conviction in the potential inherent in family systems for positive adaptation and growth out of adversity. By targeting interventions to strengthen key processes for resilience, families become more resourceful in dealing with crises, navigating disruptive transitions, weathering persistent stresses, and meeting future challenges. Resilience-oriented services foster family empowerment as they bring forth shared hope, develop new and renewed competencies, and strengthen bonds.

The Importance of Relational Bonds for Resilience in Aging

Most lives are enriched by forging intimate relationships and significant kin and social bonds within and beyond households. Indeed, longitudinal research finds strong relationships to be the most significant factor in men's successful aging (Vaillant, 2002).

Couple Relationships

Marriage vows "till death do us part" are harder to keep over a lengthening life course. With high divorce rates in the spotlight, perhaps it is more remarkable that more than half of first marriages do last a lifetime; increasingly, couples are celebrating 50 and 60 years together. Couple relationships must be resilient to weather the storms and to meet changing needs. Most who have raised children report significantly higher relationship satisfaction in postlaunching years, with more time and resources for individual and shared pursuits. Priorities for companionship and caregiving come to the fore in couple bonds. Intimacy can deepen with a sense of shared history and new satisfactions found in shared activities, such as travel, and in bonds with grandchildren.

Increasingly common are two or three committed long-term couple relationships, with periods of cohabitation and single living, creating complex kin networks in later life (Walsh, 2012). After widowhood or divorce, critical to the success of remarriage is the relationship with adult children and their approval. Women are less likely than men to remarry, some preferring not to, especially if they have had heavy spousal caregiving responsibilities and are reluctant to take on that role again. Economic, legal, and religious constraints lead many older couples to live together without formal marriage. Others enjoy companionship in a stable intimate couple relationship, yet prefer to live separately—an emerging trend termed "living apart together" (Cherlin, 2010).

Intergenerational Relationships

Stereotypes of American families have held that adult children do not care about their elders; have infrequent, obligatory contact; and dump them in institutions. Older adult parents are assumed to be too set in their ways to change long-standing interaction patterns. In fact, intergenerational relations for most Americans remain strong and are mutually beneficial, dynamic, and coevolving throughout adult life (Bengtson, 2001). Families provide most social interaction, caregiving assistance, and psychological support for elderly loved ones. The majority of older adults live with spouses, children, or other relatives, including siblings and very aged parents. Although most who are in good health prefer to maintain a separate household from adult children, they sustain frequent contact, reciprocal emotional ties, and mutual support. However, in our mobile society, uprooting for jobs or retirement can strain the ability to provide direct caregiving

and support in times of crisis. Frequent contacts by phone and the Internet with those at a distance becomes increasingly important.

Intergenerational issues around autonomy and dependency come to the fore as aging parents decline in functioning and autonomy. Many elders worry about being a burden; most are generous in contributing to the well-being of their children and grandchildren. Meeting their increasing needs should not be seen as a parent–child role reversal, which can be infantilizing and shaming. Even when adult children provide financial, practical, and emotional support, they do not become parents to their parents. Despite frailties or childlike functioning, aged parents, with many decades of adult life experience, deserve respect as elders, as in traditional cultures.

Therapists can facilitate discussions of dependency issues with sensitivity and a realistic appraisal of strengths and limitations. Giving children the power of attorney also involves a loss of self-determination. In many cases, adult children need to challenge a parent's impaired judgment and take control of risky behavior, such as unsafe driving. In our mobile society, driving a car is symbolic of independence and freedom. In one family, the sons had to take away the father's keys, only to find he had other keys hidden away. Next, they removed the car's battery; the crafty father called a service station to install a new one. Humor, rather than angry rebuke, facilitates resilience, appreciating the father's cleverness while taking further precautions.

With longer lives, intergenerational relations are more complex, as four- and five-generation families add both opportunity and challenges in balancing members' needs and family resources (Bengtson, 2001). Multigenerational relational networks are becoming smaller and top-heavy, with a declining proportion of younger people. Greater insecurity and intergenerational tensions are likely, with global economic downturns and uncertainty in employment and benefits affecting both young and old. The trend toward having few or no children will leave aging persons with fewer intergenerational connections and strain family resources for financial and caretaking support. Recent findings that 20% of women aged 40–44 years had no biological children intensify concern about the future provision of care (Kinsella & He, 2009). Responsive social policies, services, and community resources will be required to support individual and family resilience.

Societal transformations over recent decades have increased intergenerational differences between traditional and contemporary roles and relationships. For instance, elders may expect daughters to be readily available to provide care when most women at midlife are now in the workforce, with stressful conflicting demands (Brody, 2004). Tensions are particularly likely between older immigrants, who carry more traditional values from their cultures of origin, and younger generations raised in our society. For instance, traditional Eastern Asian

families value harmony and filial piety and expect that elders will be honored and obeyed. Cultural dissonance arises when younger generations depart from those norms. Family therapy can facilitate mutual understanding by empowering family members to draw on personal strengths, recognizing, negotiating, and incorporating multiple worldviews and values (Lee & Mjelde-Mossey, 2004).

Therapeutic objectives must be attuned to the challenges and preferences that make each individual, couple, and family unique. We will need to learn how to help family members live successfully in a complex and changing relationship systems, to buffer stressful transitions, and to make the most of their later life experiences.

Other Significant Bonds

Companionate bonds, social ties, and community connections become increasingly valued with age (Walsh, 2011). Many elders are actively involved with siblings, nephews, nieces, and godchildren. Interest commonly increases in family of origin connections, searching out history and geneology, attending reunions, and initiating contacts with cousins and distant relatives. Many find new purpose in mentoring youth in their communities.

Aging gay, lesbian, and transgender persons meet needs for meaning and intimacy in varied ways, often with chosen families, and influenced by their past experiences, present life circumstances, and social environment (Cohler & Galatzer-Levy, 2000). Growing numbers are experiencing the joys of marriage and parenthood; many older individuals who built life structures before the gay rights movement find greater authenticity and freedom of expression in open committed relationships in later years.

Elders who visit often with friends and family and maintain a thick network of diverse relationships are likely to live longer than those with few kin and social resources. Longtime friendships become increasingly valued; many are considered kin: They are counted on for support, connect aging persons to their younger selves, and offer perspective on emerging lives.

Strong bonds with companion animals are found to play a vital role for the well-being and resilience of older adults (Baun, Johnson, & McCabe, 2006), especially those who live alone or have suffered loss. At family gatherings, those with cognitive impairment limiting ability to follow conversations find soothing comfort and pleasure in the company of the family pet. Stroking a cat or dog releases oxytocin, reducing anxiety and stimulating well-being. Studies find the beneficial effect for nursing home residents of visits by volunteers with companion animals, increasing residents' mood, appetite, and social interaction (Walsh, 2009a, 2009b).

Later-Life Transitions: Challenges and Resilience

The family as a system, along with its elder members, confronts major adaptational challenges in later life. Changes with retirement, grandparenthood, illness,

death, and widowhood alter complex relationship patterns, often requiring family support, adjustment to loss, reorientation, and reorganization. Yet such challenges also present opportunities for relational transformation and growth.

A family's approach to later life challenges evolves from their earlier family patterns and cultural worldview. Systemic processes developed over the years influence the ability to flexibly meet new demands. Certain established patterns, once functional, may not fit emerging priorities and constraints. The launching of children involves a structural contraction of the family from a two-generational household to the couple dyad or single parent. Relationships with young adult children are redefined and parental involvement refocuses on individual and couple life pursuits. Most parents adjust well to this "empty nest" transition, welcoming increased freedom from child-rearing responsibilities (Neugarten, 1996). Yet, many continue to provide financial and emotional support through college and well beyond. In the current economic downturn, many adult children are returning to the nest, requiring renegotiation of role relations, yet also offering opportunities to forge more adult-to-adult relationships.

Retirement

Retirement is a significant milestone and adjustment for individuals and couples. Most who are healthy and financially secure are re-visioning postretirement life, from the stereotyped retreat from the world in a comfortable rocking chair. Retirement is being relabeled as "preferment," offering the opportunity to refocus on new structure and purpose, with time for leisure, learning, and new pursuits. Many take on meaningful projects or start "encore" careers. A successful transition involves a reorientation of values and goals and a redirection of energies and relationships.

Yet for most, retirement involves the loss of income, job roles, status, productivity, and coworkers, which have been central to our culture's standards for identity, success, and self-esteem. Adjustment is harder with forced retirement. Even when caused by the economy or a company's relocation, self-doubts can linger, as well as anxiety and bitterness with the loss of benefits and financial security. Residential change, common at retirement, adds further dislocation and loss of connections with nearby family and social networks, as well as familiar community services. Losses are felt in giving up a home in which children were raised and many milestones experienced.

Retirement can be financially devastating for those lacking adequate savings or benefits. In the current economic downturn, many must continue working or find new jobs long past retirement. Such pressures force a major shift in expectations and later life plans. Because of the stigma of dependency in our dominant culture, with its ethos of self-reliance, most older adults are reluctant to ask for

or accept financial assistance from their adult children; issues of pride and shame keep many from even telling their children that they are financially strapped. A family consultation is helpful to enable discussion of sensitive issues, contextualize the situation, and find respectful ways to be of assistance.

In traditional breadwinner/homemaker marriages, a husband's full-time incorporation inside the home can be challenging, with changes in role expectations, time together, and the quality of interaction. Resentment can accrue if the retiree feels he has earned the right to leisure yet expects his spouse to continue homemaking responsibilities. Dual-earner couples may get "out of sync" if one continues working past the other's retirement. For successful adaptation to retirement, couples need to renegotiate their relationship to achieve a new balance. With priorities and concerns shared through open communication, relational resilience can be strengthened as partners pull together to reshape their lives, plan financial security, and explore new interests to provide meaning and satisfaction.

The trend for older adults to move away to age-segregated retirement developments has been shifting, as many prefer to remain in their homes and communities or downsize to apartments near services, amenities, and young people. Some parents wait for adult children to settle and then move to be near them and their grandchildren. More often, with children living far apart from each other, they shuttle around to spend time with all.

Grandparenthood

With increasing longevity, more elders are becoming not only grandparents, but great-grandparents (Drew & Silverstein, 2004). The experience can hold great significance and offer many benefits. It can fulfill needs for generativity through descendants and ease acceptance of mortality. It also stimulates reminiscence of one's own childhood and child-rearing experiences. Such perspectives can be valuable in gaining appreciation of one's life and parenting satisfactions despite regrets. Young and old alike benefit from frequent contact, now facilitated by the Internet, which enables video conversations and participation in significant events.

Grandparenthood is a systemic transition that alters intergenerational relationships (Spark, 1974). When adult children become parents, it presents an opportunity for reconnection and healing of old intergenerational wounds, as they begin to identify with the challenges inherent in childrearing and develop more empathy for their own parents' best intentions. Those who have been estranged often reconcile so that their children can have a relationship with their grandparents. Grandparents and great-grandparents, with knowledge of five or more generations, are in a unique position to connect the younger generations with those that came before them through their personal recollections and stories.

Grandparents and grandchildren may enjoy a special bond that is not complicated by the responsibilities, obligations, and conflicts in the parent–child relationship (Mueller & Elder, 2003). It is often said that grandparents and grandchildren get along so well because they have a common enemy. Such an alliance can be problematic if a grandchild is triangulated in parent–grandparent conflicts over issues of authority and respect, especially when sharing a household. The family may need help to clarify and realign roles and relationships across the generations (Walsh, 2011).

Many grandparents are assuming the primary role in raising their grandchildren in kinship care, when parents are unable to do so (Engstrom, 2012). This meets a crucial need for the youngsters, yet it can take a toll on their own health, especially when they are on a limited income; nearly 1 in 5 are living below the poverty line. A family council meeting can involve others, such as aunts and uncles, in supportive roles and provide respite for the grandparent. Grandfathers are often hidden resources; even those who may not have been involved in raising their children may welcome the opportunity to play a mentoring role for grandchildren.

Foster grandparenting can enrich later life for many older adults, serve as a resource for working parents, and provide connectedness across the generations, especially where more informal contacts are lacking in age-segregated living arrangements.

Chronic Illness and Family Caregiving

Family caregiving is a major concern for the growing numbers of frail older persons, particularly those older than 85 years, who are most vulnerable (Qualls & Zarit, 2009). Family members are the frontlines of support and prolonged caregiving takes a heavy toll. Families in poverty, largely in minority groups, are most vulnerable to environmental conditions and health care disparities that heighten the risk of serious illnesses, disabilities, and caregiver strain, as well as early mortality.

Progressive brain disorders are devastating for families. Alzheimer's disease is aptly called "the long goodbye," with gradual losses of functioning, identity, family roles, and relationships. These ambiguous losses complicate caregiving and mourning processes (Boss, 1999). The irreversible disease course, worsening over many years, becomes an agonizing psychosocial and financial dilemma for families. It is especially painful for loved ones to be confused with others, even those long deceased, or not even recognized. Gentle humor can ease such situations, as in one family: At David's weekly dinner with his parents, as his mother cleared the table and went into the kitchen, his father leaned over to him and said, "Did you see that woman there? If I wasn't a married man I could really go

for her!" David chuckled and replied, "Dad, you are the luckiest man on earth because you ARE married to her—she's your wife!" They laughed together and retold the story many times—his mother enjoying the compliment.

Older adults are more likely to sustain cognitive and emotional well-being when they are valued and needed by family members. In traditional cultures, elder family members transmitted their family history, life experience, and values for younger generations to carry on. With today's rapid social and technological changes, their stories and teachings are all the more important for the young, providing roots in an uncertain world. In turn, grandchildren are also teaching their elders how to keep up with the world and keep connected through the Internet for communication, information, and social networking.

Family Interventions Priorities for Resilience

Most families try to keep their loved ones at home as long as possible. Paid caregivers, extended family, and social support networks are crucial to cope with stresses, provide respite, and deal with crisis situations. Senior centers and adult daycare programs provide interpersonal contact and pleasurable activities as they relieve caregiver strain. Family consultation and multifamily groups can strengthen resilience by providing clear illness-related information and useful guidelines for sustaining care, problem solving, and optimal functioning. It is important to reduce caregiving stress, anxiety, and depression and to address functional and relational losses. To revitalize energies and bonds, family members are encouraged to share pleasurable contact and activities in small ways in everyday life and find respite from illness/disability concerns.

Relational dynamics may require attention, such as the skew that commonly develops between the impaired person and caregiving spouse (Rolland, 1994). Savings may be depleted and plans dashed for the golden years. In one program, "resilient partners" couples groups addressed the long-term challenges of multiple sclerosis, helping partners gain mutual empathy, rebalance their relationship, and re-vision hopes and dreams to live and love as fully as possible.

From Designated Caregiver to Caregiving Team

The role of primary caregiver for older persons has traditionally been assigned to women (nearly 3 in 4), usually daughters. Today, most women are in the workforce, juggling an overload of demands (Brody, 2004). Too often, the designated caregiver becomes overburdened, with other family members on the sidelines. A family systems approach to caregiving broadens the prevalent individual model of caregiver to involve family members as a collaborative caregiving team, each contributing according to abilities and resources. Sharing responsibilities and challenges can become an opportunity to strengthen bonds and heal strained relationships. In families torn by past grievances, conflict, or estrangement,

caregiving and life-and-death decisions can be emotionally fraught, as in the following case:

> Joellen, age 42 years, was deeply conflicted when her father, hospitalized for complications from chronic alcohol abuse, asked her to donate a kidney to save his life. We explored the meaning of this dilemma for her. She felt enraged to be asked when he had been a mean drunk, often absent, and at times violent. She was also angry that he had refused to heed his family's repeated pleas to stop drinking. Yet, a dutiful daughter and a compassionate religious woman, she did not want her father to die because she denied him her kidney.
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> I broadened the dilemma to include her three siblings, suggesting that she discuss it with them, but she dismissed the idea, saying they were estranged and rarely in contact. To enlarge perspectives, I then encouraged her to discuss the situation with her mother, who informed her that the father had also asked her brothers for the kidney donation. Joellen was furious that old rivalries would be stirred up: who would be the good giving child or the bad selfish ones. This sparked her to take initiative and meet with her siblings. As they began to grapple with the shared dilemma, they seemed stuck. To open possibilities, I broadened the perspective in future developmental context, wondering if this might be just the first of many challenges ahead in attending to needs of *both* aging parents. This crisis presented an opportunity for them to begin a more collaborative relationship and become proactive as a team. Their discussion led the eldest brother to volunteer his kidney for their father, remembering loving times before the father's problem drinking. The others rallied to support him. All agreed to keep in contact and contribute to their parents' future well-being, forging a new solidarity.

Family sessions, best done proactively, can help members assess needs and resources, share feelings and concerns, and gain mutual support in reaching difficult decisions. Often, new solutions emerge through creative brainstorming. When extended care placement is needed, therapists can help families to view it as the most viable way to provide adequate care and support their efforts in navigating the maze of options. A continuum of care is needed to ensure that the level and type of care best fits needs over time and supports their optimal functioning and well-being.

Facing End-of-Life Challenges and Loss of Loved Ones

Later life is a season of cumulative losses of loved ones, friends, and peers. Death and loss are among the most profound challenges families face. A realignment of roles and relationships in the family system commonly occurs. The death of the last member of the older generation is a family milestone; the next generation is now the oldest and the next to face death. For young children, a grandparent's

death is often their first experience with loss. The death of a child before parents and elders seems unjust, upending family life cycle expectations, and is especially hard to bear.

Widowhood is a highly stressful transition, with a wide range of adaptational responses (Lopata, 1996). Optimally, clinicians and adult children can help both spouses proactively discuss end-of-life decisions and prepare for widowhood, as well as issues that affect surviving loved ones, including stepchildren. Despite profound initial grief and challenges in daily living, most surviving spouses are quite resilient over time and able to invest in other relationships (Butler, 2008). Most view themselves as becoming more competent and independent, and take pride in coping well. Adaptation can be impeded if family members or friends distance, often not having faced their own grief, mortality, or possibility of widowhood. Further dislocation occurs if the family home is given up or if financial problems or illness block independent functioning. In such cases, many widows move in with adult children, siblings, or a very aged parent; others move into assisted living residences. For resilience, family members can buffer such transitions and restabilize daily life, providing ongoing contact, support, and continuity (e.g., routines, photos, furnishings) in "new normal" living arrangements.

Family adaptation to loss involves shared grieving and reorganization of the family relationship system (Walsh & McGoldrick, 2004). The initial task for survivors is to take in the fact of death, transforming shared experiences into memories and physical presence into continuing spiritual connections (Walsh, 2009c). Encouraging the expression of grief among family members and through meaningful rituals is most helpful. Communication barriers and avoidance of contact create emotional distance and misunderstanding, prevent preparatory planning and grief, and deny opportunities to say goodbyes. In our Western mastery culture, family members raised to be "doers" and problem solvers often feel helpless in the face of decline, death, and loss, frustrated and guilty that they could not do more. Palliative care and hospice are most valuable in providing comfort and easing pain, anxiety, and emotional suffering for families. Clinicians can encourage loved ones to be fully present and engaged, making the most of precious time together, sharing favorite stories, music, or reminiscences, relating genuinely, and deepening family bonds.

Despite the common hope for a "natural" death, medical technologies prolonging life and the dying process pose agonizing decisions fraught with emotional, relational, ethical, and religious issues. Heightened emotions at such times can spark intense conflict and long-lasting cutoffs among family members. It is crucial to help family members to respect elders' needs for dignity and control in their own dying process. Advance directives shared in family consultation sessions can facilitate constructive discussion and mutual understanding (Walsh, 2006).

A Family Resilience Practice Approach

A resilience-oriented approach to practice, grounded in developmental systemic principles, engages elders collaboratively, affirms their personhood, and focuses on their strengths, resources, and potential (Walsh, 2003, 2006). We show interest in their life journey, with compassion for their struggles, sufferings, and losses, and with affirmation of their courage and endurance. We encourage their efforts for meaning, purpose, and connections, with conviction in their potential for personal and relational growth. We see their value in the lives of others and draw on family and social networks as "relational lifelines" to support their optimal functioning and well-being, their resourcefulness, and meaningful pursuits.

Resilience-Oriented Family Assessment

In all assessments, it is important to gain a holistic view of the family system. This includes members within and beyond current households, the extended kinship network, and key relationships that are—or have been—important and could be valuable resources. Whereas clinical assessments tend to focus predominantly on deficits and problematic family patterns, a resilience-oriented approach prioritizes a search for positive resource and models and mentors in kin and social networks. We note significant relationships that have been lost and those estranged that might be repaired. We are especially interested in hearing about resourceful ways family members have dealt with past adversity, such as stories about grandparents' "can-do spirit" through economic hard times that might inspire efforts in mastering current challenges.

> Rita, a 78-year-old widow who lived alone was evaluated for residential placement following a fall and brief hospitalization. The staff, assuming that she had "no family" because she had no children, doubted that she could live independently and urged placement. Rita vehemently objected, insisting on returning to her own apartment. A family resilience-oriented interview led to appreciation of Rita's strengths and relational resources. Asked what she valued about living alone, she replied, "I'm not alone; I live with my birds and my books. I'm never lonely." She enjoyed an affectionate companionship with her talkative cockatoos and did not want to be forced to give them up with a move. Daily phone contact with her sister was a valued lifeline for both.
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> A vital source of Rita's resilience was her immersion in her books, enhancing cognitive functioning and pleasure, and transporting her beyond her immediate circumstances. Many books, inherited from her father, held special meaning: they revived her close childhood relationship with him and countless hours reading together. Rita's strong identification also involved pride in his immigrant experience and cultural heritage, hardiness in adversity, and determination to survive and adapt. Her relational resources served her well and, when supplemented with community resources, supported her continued independent living and well-being.

Genograms and time lines (McGoldrick, Gerson, & Petry, 2008) are valuable tools to visualize and bring coherence to a complex network of relationships and residential patterns, noting significant bonds, losses, and transitions. Drawing a genogram with an elder can actively engage them in appreciative inquiry and can be useful in identifying those who are significant and could be engaged for support and companionship. Because older adults usually enjoy sharing their family history, children and grandchildren can be encouraged to interview their elders to learn their life stories and wisdom gained through experience.

Facilitating Family Resilience

A family resilience approach draws on principles and techniques common among strength-based practice models, attending more centrally to family stress, coping, and adaptation (Walsh, 2003). The therapeutic relationship is collaborative and empowering of client potential, tapping into and increasing competencies and resources. The therapeutic language and discourse are respectful, as the therapist relates to clients with compassion for their suffering and struggle and conviction in their potential. Therapist and clients work together to find new possibilities in mastering challenges and overcoming barriers to positive change. This approach contextualizes and humanizes problems, in light of the stressful situation and developmental challenges. Respect for family strengths despite difficulties readily engages "resistant" elders or families, who are often reluctant to come for mental health services fearing that they will be judged as deficient and shamed or blamed for their problems. Instead, family members are viewed as intending to do their best and struggling with an overwhelming set of challenges. Therapeutic/counseling efforts are directed at mastering those challenges through collaborative efforts. Clinicians help families to buffer disruptive transitions and to restabilize family life, creating new normal patterns to adapt to new situations. Resilience-based family interventions can be adapted to a variety of formats, including multifamily groups. Brief family consultations at a life transition such as residential change or widowhood can facilitate manageable steps in an adaptational process.

A family resilience approach affirms the potential in couples and families for positive adaptation and growth over the life course, tapping into their strengths and building resources as they confront later life challenges (Walsh, 2003, 2006). Caregiving and end-of-life challenges also hold potential benefits, deepening and enriching relationships if family members are encouraged to make the most of precious time. Because unresolved conflicts and cutoffs may accompany children and grandchildren into their future relationships, it is important to avert the fallout of hurt, misunderstanding, alienation, sense of failure, and guilt. Strains can be prevented and repaired by helping family members to gain mutual understanding and redefine their roles and relationships as they age and mature.

Mastering the Possible: Seizing New Possibilities

Abundant research, including recent neuroscience findings, reveals that the aging process is much more variable and malleable than long believed (Cozolino, 2008). It is important to challenge constraining views of aging and explore possibilities for personal and relational fulfillment. Older persons and their families can enhance their development by "mastering the art of the possible"—a key process in resilience—actively approaching their challenges and making the most of their strengths and options. A flexible variety of adaptive processes, rather than one single pattern, contribute to successful later life adjustment, reflecting differences in family structures, personality styles, gender roles, and ethnic, social class, and larger cultural influences. With the expansion of possibilities in later life compared to past generations, creativity and new learning are important.

Similarly, successful family functioning in later life requires flexibility in structure, roles, and responses to new developmental priorities and challenges (Walsh, 2006). Because patterns that were functional in earlier life phases no longer fit, new options can be explored. With the loss of functioning and death of significant family members, others assume new roles, responsibilities, and meaningful connections. In doing so, they develop new competencies and enhanced sense of worth. Therapists can invite couples and families to reflect on the choices they have made in life and, updating their shared journey, their choices for their remaining time, seeing their alternatives both limited and expanded. These choices are often complex, intertwined with the needs and decisions of others.

Preparedness is a key process in family resilience. Families should be encouraged to be proactive in anticipating such challenges as transitional living arrangements and end-of-life decisions, discussions that are commonly avoided. Future-oriented questions can also open up new possibilities for later life fulfillment. One son worried about how either of his parents would manage alone on the family farm if widowed. Finally, on a visit home he got up his courage, asking them, tentatively, whether they had ever thought about what they might do. His mother replied, "Sure, I know exactly what I'd do: I'd sell the farm and move to Texas to be near our grandkids." His father—surprised—said, "Well if that isn't the [darndest] thing! I've thought a lot about it too, and if your mother weren't here, I'd sell the farm and move to Texas!" With communication opened, the couple decided to sell the farm and move to Texas, where they enjoyed many happy years with their children and grandchildren.

Meaning Making: Gaining Wisdom and Integrity

Later years and relationships have a significance of their own. In Erikson's theory of human development, older adults review earlier life experiences and their

meaning in the quest to achieve integration, reconcile earlier issues, and overcome despair at the end of life's journey (Erikson, Erikson, & Kivnick, 1986). The task of achieving integration is challenging, facing the finiteness of life and awareness of past mistakes, hurts, and disappointments. In this process, new adaptive strengths and wisdom can be gained. Vital involvement in the present is essential, drawing on such attributes as humor, compassion, curiosity, and commitment. Resilience is fostered through active meaning-making efforts to reach some acceptance of their lives, putting past traumas and inescapable missteps into perspective. A common thread in successful aging is the dynamic process in coming to see themselves not as victims of life forces, defined by their limitations, but rather as resilient, with the capacity and initiative to shape as well as to be shaped by events.

A conjoint family life review expands the benefits of individual life-review sessions found to facilitate the integration and acceptance of one's life and approaching death (Walsh, 2011). Sharing reminiscences can be a valuable experience for couples and family members, incorporating multiple perspectives and subjective experiences of their life over time. The process of sharing the varied perceptions on hopes and dreams, satisfactions, and disappointments enlarges the family story, builds mutual empathy, and can heal old wounds. Earlier conflicts or hurts that led to cutoffs or frozen images and expectations can be reconsidered from new vantage points (Fishbane, 2005). Misunderstandings and faulty assumptions can be clarified. Successive life phases can be reviewed as relationships are brought up to date. People in later life are often able to be more open and forthright about earlier transgressions or shame-laden family secrets. Past mistakes and hurts can be more readily acknowledged, opening possibilities for forgiveness (Hargrave & Hanna, 1997). At life's end, the simple words, "I'm truly sorry" and "I love you" mean more than ever. Family photos, scrapbooks, genealogies, reunions, and pilgrimages can assist this work. Stories of family history and precious end-of-life conversations can be recorded and preserved. The transmission of family history to younger generations can be an additional bonus of such work.

A priority for clinicians is to draw out sources of meaning and facilitate efforts by older adults and their families to integrate the varied experiences of a lifetime into a coherent sense of self, relational integrity, and life's worth (King & Wynne, 2004). Family resilience is fostered by an evolutionary sense of time and becoming—a continual process of growth, challenge, and change over the life course and the generations. A family life-cycle perspective can help members see adversity as milestones in their life passage and can link them with past and future generations.

Notable in this life phase is the search for life's transcendent meaning. Individuals and their families organize, interpret, and connect experiences in many ways, influenced by the culture and time in which they have lived and the contribution of critical events and life circumstances. Spiritual beliefs and

existential matters come to the fore with aging and should be explored in therapeutic work. They may contribute distress, as in concerns about sin and afterlife, but more often can be positive resources. Abundant research documents the power of personal faith and contemplative practices, such as prayer, meditation, and rituals, in nourishing resilience (Walsh, 2009c). Faith communities play an increasingly important role with aging, offering a "spiritual home" for congregants, as well as spiritual guidance and practical support to families in times of need. Many find spiritual expression through humanistic values, involvement in nature or the arts, or purpose in social activism. Family bonds and coping efforts are strengthened through shared values and practices.

As families and their elder members approach maturity with both wisdom and celebration, they can find possibilities in aging for enrichment and unexpected pleasures. Although serious later life challenges and losses should not be minimized, appreciation of life and loved ones is enhanced when seizing each day and shared enjoyment as time to be savored. Many find it to be the best time of life, feeling freer to be themselves; with less conflict and more balance; better able to know and use their strengths; and surer of what counts in life. For some older adults, the greatest reward of parenting has been delight in fully grown children, gaining their friendship and affection. The wisdom of elder persons, linked with the energy and new knowledge of the young, can yield rich interchange.

Issues for Clinicians

As clinicians, we need to deepen awareness of our own apprehensions and biases, enlarge our perspective on the whole life course, and gain appreciation of what it is like to mature and become old, for relationships to evolve and grow stronger, and for new ones to develop, meeting emerging priorities. Interface issues with our aging family members may contribute to anxiety, avoidance, over-responsibility, or empathic difficulties. As we better appreciate the elders in our own families, attend to our own losses and grievances, and explore our own growing maturity, therapeutic work with individuals, couples, and families in later life will take on deeper meaning and possibilities for growth.

Families are our most valuable resources, providing not only caregiving, but also a sense of worth, lasting emotional ties, and human dignity in approaching life's end. We can strengthen their resilience by understanding their challenges and supporting them in our social policies and provision of health care. Despite varied family structures and changes over the life course, what remains constant is the centrality, and the fundamental necessity of relatedness. Overcoming life's adversities on that journey involves the courage to reach out, seeing aging as a personal, relational, and spiritual evolution, seeking new horizons for learning, change, and growth.

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CHAPTER 9

The Role of Resilience in Chronic Illness and Disability in Older Adults

Bruce Rybarczyk, Erin E. Emery, Liza L. Guequierre, Andrea Shamaskin, and Jay Behel

ABSTRACT

Resilience can be defined as the capacity for *resistance*, *recovery*, and *rebound* of psychological health after a challenge, such as chronic illness or acquired disability (Szanton & Gill, 2010). Older adults as a group not only confront more challenges of this nature but evidence suggests that they exhibit more resilience in the face of these types of challenges, particularly in the domains of resistance and recovery of psychological well-being. Various coping theories have been developed to account for age-related resilience, including stress inoculation resulting from exposure to lifelong stressors, illness and disability occurring on-time, enhanced coping skills, smaller but richer social networks, and more effective emotional regulation. Age-related psychological growth, including increased wisdom, body and ego transcendence, increased social competency, selective optimization with compensation, and increased spirituality have also been implicated as protective factors. Lastly, positive psychological factors that assist older adults in adapting to chronic conditions include positive reframing, optimism, and hope. We conclude by presenting evidence that interventions can and should be used to enhance resilience in older adults facing chronic illness and disability, and they may, in fact, be an age group ideally positioned to benefit from such interventions.

Physical aging takes many forms and progresses at a unique rate and trajectory for each person experiencing it. Individuals may experience "diseases of aging" late in middle age or may be lucky enough to have even minor illnesses postponed until late life. Still, older adults, as a group, predictably experience chronic illnesses and associated debility and disability with greater frequency than younger adults. Emotional responses and adjustment to such chronic illnesses are as diversified as aging itself. At the extremes, individuals may experience intense grief in response to relatively mild health problems, whereas others may experience only minimal distress in response to physically devastating illness experiences. Nevertheless, again as a group, older adults experience fewer adjustment problems, report less distress, and evince more resilient coping in the face of chronic illness and disability than younger adults experiencing similar challenges.

In light of this somewhat surprising pattern of late-life resilience, this chapter assays older adults' responses to chronic illness and debility from several different perspectives. First, we will examine the body of empirical findings providing evidence for late-life resilience and coping across a range of different medical conditions and describe several general hypotheses that have been advanced to account for increased adaptive coping in late life. In this context, it should be noted that the predominate evidence suggesting greater resilience is found in terms of more favorable *psychological* outcomes within the domain of rehabilitation rather than physical outcomes. This is partly related to the fact that it is more difficult to detect subtle medical effects and then link such effects to enhanced psychological resilience. However, given the heightened interrelationship between physical and psychological functioning in late life, mental health outcomes in the context of medical illness will often have repercussions for other physical rehabilitation (hereafter referred to simply as rehabilitation) outcomes. Numerous studies have demonstrated physical outcomes are poorer for older adults with depression in the wake of a range of physical conditions (e.g., coronary bypass surgery, hip fracture), so it stands to reason that individuals who have higher levels of resilience in terms of psychological adaptation to illness will have fewer adverse physical outcomes.

Following the review of evidence for late-life resilience, an examination of developmental and personality factors implicated in resilience is provided, supporting the notion that some aspects of adaptive coping may be behaviorally operationalized and perhaps fostered in others. We then proceed to a review of positive psychological coping as it pertains to older adults' responses to chronic illness. Having explored these diverse conceptual approaches, we then briefly describe how interventions may be employed to reinforce resilience and adaptive coping in older adults struggling in the face of chronic illness and disability. Finally, we will delineate several unanswered questions that, we hope, will inform future directions of research.

EVIDENCE OF ENHANCED RESILIENCE IN COPING WITH CHRONIC ILLNESS AND DISABILITY

Although individual psychosocial factors such as social support account for a great deal of variance in coping with chronic illness and disability, there is a substantial body of evidence showing that chronological age shows a modest but consistent positive correlation with better coping and psychological adjustment across a broad range of medical conditions. These findings range from long-term adjustment to a variety of chronic illnesses such as multiple sclerosis, spinal cord injury, heart transplant, and amputation as well as short- and long-term adjustment to cancer (e.g., Bombardier, Ehde, Stoelb, & Molton, 2010; Cassileth et al., 1984; Rybarczyk et al., 2007; Williamson, Schulz, Bridges, & Behan, 1994). Measurement of adjustment in these studies has ranged from rates of negative mood states, such as depression and anxiety, to more broad measures of positive adjustment, such as quality of life and well-being.

Older adults do face more chronic health problems than younger adults, and several theories attempt to explain how older adults cope with and adapt effectively to such illnesses. Accumulated life experiences are often highlighted as one reason why older adults, as a group, may fare better in the face of health problems. The inoculation hypothesis suggests that prior experience with a negative event provides an inoculation from a strong emotional response when experiencing a similar situation in the future (Eysenck, 1983). Considering *stress inoculation* in the context of aging, older adults are more likely to have prior experience with stressors and adversity relative to younger adults and are thus less impacted or more prepared to handle the stressor.

Older adults' increased experience with sickness, medical regimens, and common challenges across illnesses likely buffers the effects of stress when managing new health problems or exacerbations of old problems. This explanation has been advanced by prior studies of age differences in coping with health issues, including a noteworthy study that examined a large group of patients ($n = 758$) across six different chronic illnesses (Cassileth et al., 1984). These researchers found that older patients (>60 years old) had better total mental health scores than middle-aged or younger patients in all diagnostic groups. They suggested that the older patients may have developed more effective stress management skills as a result of more years and experience with illness. Clinically, older adults superficially may appear to experience new medical challenges as simply less distressing than younger adults. However, this presentation likely is underpinned by explicit and implicit representations of general and specific (past) illness experiences, which directly shape both one's emotional reactions and coping responses to the new illness. Furthermore, presumably, illness-related distress is most effectively dampened when one's illness history is

a history of adaptively managing prior illnesses, although empirical verification of this point is needed.

Similar findings are evident when examining the impact of acquired disabilities commonly seen in rehabilitation settings. Williamson and her colleagues (1994) hypothesized that for individuals experiencing acquired disabilities, activity restrictions are not as likely to lead to depression in older adults relative to younger adults. They obtained a similar finding that older patients with cancer were not as depressed as a matched group of younger patients with cancer (Williamson & Schulz, 1995) and reason that, in general, older adults do not perceive losses in activity to be as critical because of age-related psychological changes. In part, they explain their findings and base their hypothesis on developmental theories (e.g., Neugarten, 1969), positing that older adults move away from an overall emphasis on active mastery (i.e., directly changing the environment to suit one's needs and desires) and move toward a more passive–accommodative approach to the world. In addition, Schulz, Heckhausen, and O'Brien (1994) suggest that many older adults compensate for loss of external control by exerting more "secondary control" over their internal (i.e., psychological) world. Even in rehabilitation settings, where some active degree of active mastery is expected and encouraged, older adults can successfully use the accommodative approach as they come to recognize and accept a "new normal" in physical functioning.

One example of enhanced physical outcomes related to psychological resiliency in old age can potentially be seen in the studies of race differences in functional health and longevity. One recent study found that the disparity of functional health between African American and White adults increases throughout life but then reverses in the oldest old, and the gap in functional health across races begins to shrink (Kim & Miech, 2009). Socioeconomic status explained the divergence in functional health in younger and middle-aged adults, but it did not explain the late-life convergence of functional health. In terms of longevity, results from the 2006 *National Vital Statistics Report* (Heron et al., 2009) found that Whites maintain higher life expectancy than African Americans from birth through age 80 years, at which point the trend reverses and African American adults have higher life expectancy after age 85 years. According to Becker and Newsom (2005), experiences of racism play an important role in the development of values of independence, spirituality, and survival, which in turn may impact coping with chronic illness later in life. Through qualitative interviews, participants in their study testified to a high degree of autonomy and also maintained a lifelong mentality of perseverance and determination that continued into old age. These authors identified one major theme from these interviews as older African Americans view their illness as another adversity to overcome or rise above. This

mind-set fits well within the framework of the inoculation hypothesis (Eysenck, 1983). Regarding African American older adults, more potent stress inoculation may indirectly reduce the psychological impact of managing chronic health problems, thus resulting in a resilient adaptation to chronic health stressors.

Another interesting strain of rehabilitation-relevant resilience has been highlighted with heart transplant patients. The posttransplant recovery period is often most difficult and requires a great deal of adjustment to new physical limitations and complex posttransplant medical regimens as well as emotional challenges stemming from role loss and challenges to identity. In contrast to evidence indicating that older adults have modestly greater posttransplant morbidity and mortality outcomes, there is a growing body of evidence demonstrating that older patients have enhanced psychological adjustment relative to their younger counterparts. Recent research has found that across a wide array of domains—including quality of life, psychological adjustment, and adherence—older heart transplant patients demonstrate better outcomes than younger patients at 5 years posttransplant (Shamaskin et al., in press). It should be noted that such favorable outcomes seem to be caused by more effective recovery aspects of resilience. During the initial stages of adjustment to transplant, there are high rates of psychological distress in all age groups. The recovery that occurs over time appears to be greater in the older adult populations.

There are several reasons why older patients may demonstrate better psychological adjustment after transplant. Older patients may view the transplant and recovery period differently than younger patients, in that the challenges of the posttransplant regimen are worth their hardship because of the extra time potentially gained from the transplant. This perspective fits with Neugarten's (1979) ideas of "on-time" versus "off-time" events, and a heart transplant for an older patient may be a more on-time, expected event in which the older adult can process and reconcile the event with the continuity of the life cycle. For younger patients, the transplant may be incongruous with an expectation for health at their age, and thus cause what Neugarten terms a *psychiatric crisis*. Other theories of aging and resiliency suggest that cumulative life experiences result in enhanced coping abilities in the face of physical decline, evidence which has been seen in limb amputation (Williamson et al., 1994).

Additionally, these coping abilities may be related to changes in perspective; some research has found that many older adults will rate themselves as "aging successfully" even in the presence of chronic medical illness or physical disability (Montross et al., 2006). Older adults have been shown to employ a form of downward social comparison when measuring their own functioning, selectively comparing themselves to frail older person rather than their healthier same-age counterparts. The importance of perception is also highlighted in studies that

demonstrate that physicians, viewing illness from their younger perspective, routinely underestimate the quality-of-life ratings of their older adult patients who have multiple medical illnesses.

Evidence of a form of age-related resiliency is also found in pain literature. A comprehensive review of the literature found a consistent age-related increase in experimental pain threshold and diminished sensitivity to lower levels of noxious stimulation, as well as changes in pain quality that included less intense pain descriptors among older adults (Gibson & Helme, 2001). This is consistent with studies showing that older adults report diminished emotional responses to pain such as depression, anxiety, anger, or fear. An important consideration when interpreting these and similar results is that age-related patterns do not mean that "age" itself causes any outcomes. Age should always be considered a proxy for a variety of biopsychosocial or life stage factors (Gagliese, 2009), which, in regard to pain, may manifest itself as older adults are being more accustomed to managing pain or are more willing to accept some degree of pain and discomfort as a part of growing older. An interesting recent study of chronic pain patients found that highly resilient older adults reported less day-to-day pain "catastrophizing," a relationship that was mediated by experiences in positive emotion (Ong, Zautra, & Reid, 2010). These researchers concluded that daily experiences of positive emotion appear to buffer against elements of pain catastrophizing (rumination, helplessness), which may reinforce and strengthen psychological resiliency regarding late-life pain.

Some caution needs to be exercised when interpreting this cross-sectional data regarding coping with chronic illness. First, age differences are often difficult to tease apart from length of time one has experienced an illness or disability, which has been shown to be an independent predictor of adjustment. Second, the current cohort of older adults may be from a generation that has always been more tolerant of hardship, and subsequent generations may not exhibit the same level of tolerance and adaptability as they age. Third, older individuals with long-term disability and illness may be a selected group of disease "survivors" with higher levels of resilience or they may, in fact, have a milder form of a condition leading to greater longevity.

Finally, there is some evidence that older adults with disability and chronic illness are less likely to exhibit posttraumatic growth and benefit finding relative to younger patients (Bombardier et al., 2010)—two concepts that are encompassed by the "rebound" aspect of resilience (Szanton & Gill, 2010). This pattern would be consistent in the previously discussed hypothesis that older adults draw upon prior experiences with and the familiarity of illness to shape their coping, whereas adaptive, long-term coping among younger adults may be shaped by redefined goals, roles, and expectations for the future. Thus, it may be that older

adults are generally capable of enhanced psychological resistance and recovery in the face of medical challenges, but not as much growth as younger adults who are in a better developmental position to grow from adversity. In summary, further research employing longitudinal designs and examining multiple age-related factors simultaneously are needed (Bombardier et al., 2010) to elucidate our understanding of age differences in coping with chronic disease and disability.

LATE-LIFE DEVELOPMENTAL AND PERSONALITY FACTORS

Erik Erikson's developmental theory included a single stage for late life—integrity versus despair. This stage was characterized by life review and analysis, essentially determining whether or not life was well spent. In 1968, Robert Peck expanded this final stage into three tasks: differentiation versus role preoccupation (redefining the self apart from a work role), body transcendence versus body preoccupation (viewing the self as larger than the declining physical body), and ego transcendence versus ego preoccupation (continuing to develop one's legacy in the face of impending death). Each of these tasks is key to the occurrence and promotion of resilience for older adults in health care settings.

An acute health event or exacerbation of a chronic illness may create a significant change in an older adult's ability to engage in previously held roles or enact them in the same way. Resilience and adaptive completion of developmental tasks require the ability to identify strengths in fulfilling other valued roles in the face of functional losses and/or creativity in the identification of alternative methods for enacting impacted roles. Being in rehabilitation and other health care settings can represent an opportunity to either focus on the declining physical body or transcend such a limited view by recognizing the other aspects of self that are valued by the individual and others. Further, for many, health events that require hospitalization can bring the proximity of death to the foreground. Moving away from a preoccupation with death requires the recognition that generativity remains an option even as functioning declines. In each of these tasks, the ability to shift focus from one aspect of the older adults' experience to the entirety of both their current situation and life as a whole is what defines and breeds resilience in these settings.

One late-life strength that allows for such perspective taking is wisdom. Paul Baltes and his colleagues define wisdom as "expert knowledge in the fundamental pragmatics of life that permits exceptional insight, judgment, and advice about complex and uncertain matters" (Pasupathi, Staudinger, & Baltes, 2001, p. 351), and as "an expertise in the conduct and meaning of life" (Baltes & Staudinger, 2000, p. 124). Further, Ardelt (2004, p. 260) states that "intellectual or theoretical knowledge is knowledge that is understood

only at the intellectual level, whereas wisdom is understood at the experiential level." Thus, although higher levels of formal education and intellectual functioning are an advantage in the development of wisdom, life experience is essential.

Much like an expert chess player can see the multiple options leading from one move based on the experience of hundreds of games, wise individuals see the broader picture of complex life experiences that provide the context for one event. General life experience allows for this awareness, and specific health experiences may provide further expertise. As noted earlier, given that most adults older than 65 years have at least one chronic illness, their life experiences may lend themselves to demonstrations of resilience in the face of additional physical adversity. Wise older adults are able to recognize that a new disability may provide challenges while also recognizing available resources for coping with the challenge and perceiving the disability as an opportunity for growth. Further, social reasoning has been found to improve with age, even in the face of declining fluid intelligence (Grossmann et al., 2010). Thus, navigating the interpersonal demands of a new disability may, in fact, come easier for older adults than for younger adults.

Sharing some features of the socioemotional selectivity theory (see Chapter 5), Baltes and Baltes' (1990) selective optimization with compensation (SOC) theory describes well the process of older adults moving successfully through a hospitalization or rehabilitation process. *Selection* refers to a restriction in life pursuits caused by decreased functional ability; individuals engage in a more limited range of activities that are possible with existing abilities. Although the least preferable of the adaptive options, selection may be most likely in the context of severe impairment or when supportive resources are limited. This approach may also be most effective in the early stages of recovery from an illness and is frequently seen in rehabilitation settings. In *optimization*, the older adult capitalizes and builds on existing abilities and resources to maximize functioning; one major advantage to this component is that it can be used at all levels of disability. Physical, occupational, speech, and psychological therapies can facilitate an ongoing optimization process in rehabilitation even as they support short-term selection. Rehabilitation therapies may also facilitate *compensation*, in which cues, environmental adaptations, and/or adaptive devices are used to optimize functioning.

Religious and spiritual beliefs and practices also have been linked to resiliency in the face of many types of illnesses and disabilities (see Levin & Chatters, 2008). Spirituality can provide meaning, sense of control, and opportunities for healing. Although spirituality does not exist exclusively within the domain of older adults, the current cohort of older adults is more likely to identify

themselves as religious or spiritual relative to younger adults, and more likely to use their practices as a resource in coping. Not only can religious practices be comforting and create connection to a lifelong experience of self, but they are also available at many levels of functional ability. Further, even in the context of limited social support, many people experience spiritual support as always available by either turning to God or to a sense of connection with the transcendent.

Positive Psychological Factors

Many older adults use positive psychological coping techniques when facing illness and disability. The MacArthur Study of Successful Aging found that older adults tend to thrive when certain factors are present in their lives. Specifically, it was found that consistent with a late-life shift to fewer but more meaningful relationships, older adults who seek and maintain positive fulfilling relationships with others and learn to make new friends as they age tend to do better when faced with illness/disability. A sense of humor, practicing intellectual curiosity, accepting limitations, accepting assistance, mindfulness, and realistic identification of the positives in situations are but a few of the other positive coping skills that have been identified as effective in the face of illness. Positive reframing, optimism, and hope have been identified as broad factors underpinning these disparate coping skills.

Positive reframing involves cognitive processes whereby illness factors and associated functional changes are relabeled as less negative or perhaps even as neutral, challenges are redefined as manageable, and positive meaning is found in the illness experience. For example, a person may view a wheelchair, cane, or walker as a symbol of deterioration of the body, leading to an experience of sadness and fear. This focus highlights what has been lost and promotes fear about future losses. Positively reframed, the walker may be labeled as helpful tool with the potential to enable mobility and maintain one's independence. Similarly, someone dealing with a chronic illness can view oneself as a victim (a passive frame) or as a survivor (an active frame). This person-as-victim viewpoint could then lead to automatic thoughts such as, "This is unfair and my future is bleak. I won't accept any help because it won't do any good," whereas the survivor frame can generate affirming and motivating thoughts such as, "I made it through this difficult situation and my life can continue. If I accept some help, I will be independent longer." Thus, the ability to reframe and use strengths in the face of an illness or disability can have profound positive effects not only on the older adult's beliefs and corresponding health behaviors, but also on overall life satisfaction. Moreover, there is some evidence that older adults are better able to positively reframe significant illnesses compared to younger adults, likely due, in part, to the accumulated life experiences and improved emotional regulation discussed earlier.

One way of conceptualizing this dispositional tendency to positively reframe a situation is through the concept of optimism or positive explanatory style (Seligman, 1991). The optimistic explanatory style reflects the pattern of making variable and specific attributions for negative outcomes rather than stable and global attributions. For example, an older adult with an optimistic explanatory style, faced with a hospital stay after a complication from a chronic illness, might view the situation as a setback (variable) because of a need for a medication and dietary change (specific) and not an indication that the hospitalization is the beginning of an inevitable decline (pessimistic, global, stable). Dispositional optimism has been shown to correlate with more proactive coping in older adults with chronic illnesses. By remaining optimistic, the older adult can be focused on taking action to improve one's situation rather than remaining inactive. Health care professionals can help foster this sense of optimism by increasing older adults' sense of control over their own lives by, for example, inviting their active input in all aspects of treatment planning. Realistic optimism and a sense of control can facilitate the older adults' continued engagement in recovery and counter helplessness. Harnessing older adults' sense of wisdom also can counter deterioration/helplessness stereotypes and foster motivation to persist with rehabilitation and other aspects of recovery.

Hope, a construct related to optimism, is a state of mind that enables older adults facing illness/disability to positively reframe a situation, maintain optimism, and thus engage in adaptive coping. Hope can be defined as "a positive motivational state that is based on an interactively derived sense of successful (a) agency (goal-directed energy) and (b) pathways (planning to meet goals)" (Snyder, Irving, & Anderson, 1991, p. 287). Thus, hope consists of both an ability to recognize steps toward meeting goals, as well as the will to engage in these steps. For older adults, hope can be informed by prior successes in facing life challenges. Although related to the construct of optimism, hope is explicitly defined by a goal/outcome-directed way of viewing the future.

Older adults who are able to envision how their lives can be better in the face of illness or disability and recognize how they can take steps to improve their lives show positive gains in medical settings. In fact, hope is thought to be a key factor in adherence to medical recommendations. Researchers have hypothesized that hope may play such a pivotal role in recovery by empowering the individual to believe that a better future is possible (Hanna, 2002), whereas hopelessness can slow recovery and is correlated with poor general physical health outcomes (e.g., Sobel, 1995). Although encouraging positive psychological factors such as hope is important across medical environments, rehabilitation settings—abetted by the positive psychology roots of rehabilitation psychology—are in a unique position to delineate specific and active strategies for inculcating hope and fostering optimism.

INTERVENTIONS TO ENHANCE COPING WITH CHRONIC ILLNESS IN LATE LIFE

The focus of the American healthcare system is gradually shifting toward managing chronic illness and disability, with an emphasis on maximizing independence and quality of life in late adulthood. The goal is to help people *live well* rather than simply *live longer*. As such, the field of psychology will play an increasingly important role in the health care system of the future and in designing interventions that enhance coping for older adults. Furthermore, such interventions will likely provide an enhanced benefit for older adults because physical and psychological conditions become more interdependent and reactive to each other with advancing age. Therefore, interventions aimed at enhancing psychosocial coping resources can have a significant impact on the physical health of older adults. Additionally, because of age-based strengths such as increased positive emotions, interpersonal competence, and wisdom, it is possible that older adults are able to better capitalize on interventions that reinforce these existing strengths.

There is ample evidence to suggest that older adults often are ideal candidates for cognitive behavioral therapy (CBT) interventions to enhance coping with chronic medical conditions, irrespective of whether they have poor or good coping prior to intervention. The largest amount of CBT intervention research been conducted in the areas of chronic pain and insomnia, two clinical issues that occur with increased frequency in late life. Contrary to traditional bias that older adults may not benefit from CBT interventions because of the introspection and ability to make significant behavioral changes required, studies demonstrate that older adults obtain equal benefits relative to younger adults from CBT interventions generally (Sorocco & Lauderdale, 2011), as well as specific CBT interventions for both insomnia (Irwin, Cole, & Nicassio, 2006) and pain (Keefe, Somers, & Martire, 2008). In addition, they are no less likely to drop out of treatment, are equally capable of learning relaxation procedures often required in these interventions, and demonstrate the same level of benefit as younger adults when the intervention is provided in a self-help format.

In spite of the success in these two areas of intervention, further research is needed to develop interventions that are tailored to the specific developmental strengths of older adults described earlier. For example, Rybarczyk and Bellg (1997) have developed an age-specific stress intervention for the health care settings that targets the increased propensity for positive reminiscing about past achievements and milestones in late life. Older individuals awaiting surgery who participated in a "life narrative interview" focused on past coping successes demonstrated reduced anxiety and increased coping self-efficacy relative to a control group. Again, this intervention was specifically designed to enhance an existing age-based strength, therefore building on resiliency rather than correcting a deficit in psychological functioning. Other resiliency-based interventions

that could be designed for and specifically tested with older adults with chronic disease include ones that promote optimism, hope, and positive reframing.

Another example of a strengths-based intervention for older adults is the BRIGHTEN (Bridging Resources of an Interdisciplinary Geriatric Health Team via Electronic Networking) program (see http://www.brighten.rush.edu). As highlighted in this chapter, older adults often have a variety of health issues that can interact with their emotional state. The BRIGHTEN team goes beyond those who typically treat mental health problems and uses a strengths-based interdisciplinary approach to capitalize on the wisdom and resiliency inherent in older adults while addressing physical health and rehabilitation concerns. Such an approach involves an interdisciplinary team consisting of psychology, social work, psychiatry, physical therapy, occupational therapy, dietetics, chaplain, pharmacy, and the patient's primary care physician. The team examines the whole person and helps older adults use a variety of sources and resources they already have and provides direct referrals to a variety of providers and programs. Outcomes of the program include clinically and statistically significant reductions in depression and anxiety along with increased well-being and improved communication between the patient and health care providers.

FUTURE DIRECTIONS AND CONCLUSION

A systematic program of research needs to be conducted to shed further light on this important area and address important unanswered questions. First, is resilience in old age a normative phenomenon, or does it applies only to those who deal successfully with a high level of risk or adversity? What is the level of challenge, risk, or adversity that is required before resilience comes into play in the face of a health crisis? Using stress inoculation theory as a basis, can we predict outcomes for certain older adults based on exposure to prior experiences that built resiliency? What specific types of experiences build resiliency that, in turn, improves outcomes later in life following disease and disability onset? Does resiliency in older adults based on lifetime experiences equate to wisdom or are they separate constructs? Additionally, more research needs to be done on whether the protective factors noted previously are essentially equal across groups or whether they vary by condition or specific characteristics of the individual (e.g., gender, socio-economic status (SES), race, age, type, or level of disability). Finally, although current measures of resiliency exist (e.g., the Ego-Resiliency Scale), would it be important to develop a measure that captures the specific age-related elements of resiliency described in this chapter? Such a measure might be used to assess whether interventions aimed at enhancing resilience in older adults can be effective.

In addition to psychological factors highlighted in this chapter, there are likely to be a wide range of other factors that have an impact on resilience

potential and outcomes following challenges like the onset of an acquired disability (e.g., stroke). Szanton and Gill (2010) society to cells holistic model of resilience in later life delineates six such factors and the ways in which their interactions may impact an older adult's capacity for resilience. These factors and their components include the following:

- Society: developmental, educational, physical, psychological, economic opportunities
- Community: institutions, social supports, social capital, the built environment, level of diversity
- Family: developmental opportunities, behavior modeling, connectedness, sense of safety and security
- Individual: views of self and world, coping strategies, spirituality, gender, race
- Physiological: neurochemical activity, hormone balance, glucose regulation, inflammation
- Cellular: genetic inheritance, mitochondrial function, NF-κB, cellular senescence

This model emphasizes that there are clear potential disparities in the capacity for resilience given the number of factors that may be outside the control of the older adult, along with many potential points of maximizing resilience in later life. Rehabilitation offers excellent opportunities for observing and understanding the interplay between the various components. Additionally, it provides an ideal setting for identifying and maximizing individual and community supports, while working with the medical team to address modifiable physiological factors are key in facilitating resilience in the face of illness and disability.

Although some researchers may characterize resilience as a personality trait, a more behavioral perspective would suggest that it can be developed, fostered, and can flourish later in life. Some older adults may have developed a sense of resilience prior to the onset of disability. If not, hospitalization, particularly in a rehabilitation setting, may represent an important opportunity for facilitation of a holistic approach to resilience and aiding older adults in using their own wisdom and other resources.

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Loss, Trauma, and Resilience in Adulthood

George A. Bonanno, Maren Westphal, and Anthony D. Mancini

ABSTRACT

The first wave of research on loss and potentially traumatic events (PTEs) was dominated by either a psychopathological approach emphasizing individual dysfunction or an event approach emphasizing average differences between exposed and nonexposed groups. We consider the strengths and limitations of these approaches and then review more recent research that has focused on the heterogeneity of outcomes following aversive events. Using both traditional analytic tools and sophisticated latent trajectory modeling, this research has identified a set of prototypical outcome patterns. Typically, the most common outcome following PTEs is a stable trajectory of healthy functioning or resilience. We review research showing that resilience is not the result of a few dominant factors, but rather that there are multiple independent predictors of resilient outcomes, and then review some of the possible factors that might inform resilient outcomes in older populations. Finally, we close by critically evaluating recent efforts to inculcate resilience and suggest possible ways such efforts might best move forward.

Most of us at some point in our lives will suffer the death of loved ones. As we age, losses of significant others occur with greater frequency. Other more traumatic events are also common. Population-based studies have consistently documented that over the course of a normal life span, most people are exposed to at least one and often several events severe enough to meet *Diagnostic and Statistical*

Manual of Mental Disorders, fourth edition (*DSM-IV*) criteria for a psychological trauma (e.g., an event that threatens or causes serious personal harm or injury). Although such events are distressing for most people, it is now abundantly clear that not everyone reacts the same way. Indeed, the marked variability in adaptation to such events suggests that the commonly used term "traumatic" is a misnomer. Rather, these events are more appropriately referred to as "potentially traumatic events" or PTEs (Bonanno, 2004).

Prospective and longitudinal studies on the course of reactions to PTEs have consistently documented a relatively finite and predictable set of prototypical patterns of individual variation. In this article, we review these prototypical patterns but focus most of our attention on recent studies that have documented a trajectory of stable, healthy adjustment or resilience (Bonanno, 2004). We next consider predictors of the resilient outcome trajectory, explore possible factors of particular relevance to aging populations, and suggest avenues for future research.

THE LIMITS OF DIAGNOSES AND
THE PROBLEM WITH AVERAGES

By definition, potentially traumatic events (PTEs) are highly distressing life events that involve actual or threatened death or serious injury and that potentially may result in serious psychological harm. In some cases, when psychological reactions are extreme, clinical intervention may be required. Although generally considered to be extremely rare, PTEs are actually surprisingly common. Epidemiological data based on retrospective accounts indicate that most people experience at least one and sometimes several PTES over the course of their lives (see Bonanno, Westphal, & Mancini, 2011). Studies using more proximal assessments, such as web-based diaries, suggest the lifetime frequency of PTEs is probably even greater (Lalande & Bonanno, 2011; Read et al., 2011).

Because PTEs are common, their potential to engender psychological harm creates a serious public health concern. Driven by this concern, the social sciences have traditionally understood reactions to these events almost exclusively in terms of one of two dominant approaches: discrete categories of psychopathology and average-level comparisons between exposed and nonexposed groups (Bonanno, Brewin, Kaniasty, & La Greca, 2010; Bonanno et al., 2011). We consider the advantages and limits of each approach in the following text before describing a broader individual differences perspective that characterizes prototypical trajectories of PTE outcome.

The Psychopathological Approach

By far, the most typical approach has been to conceptualize outcome following PTEs in terms of categorical forms of psychopathology, most commonly

posttraumatic stress disorder (PTSD) and in recent years complicated grief (CG). The pathological approach imparts several immediate advantages. Diagnostic categories are discrete and easy to grasp, and they form a useful and parsimonious heuristic from which to develop and implement clinical interventions. The formal recognition of PTSD as a legitimate diagnostic category in 1980, for example, was followed by a surge of new research on traumatic stress that rapidly advanced our understanding of the etiology, prevalence, neurobiology, and treatment of extreme trauma reactions. The more recent articulation of diagnostic criteria for CG (e.g., Horowitz et al., 1997) has likewise cultivated a similar progression of simplification and intervention for extreme and chronic grief reactions.

Importantly, however, the categorical emphasis on psychopathology also presents serious limitations. Diagnostic entities are primarily conceptual rather than empirical and their revision is not always driven by scientific concerns. Over time, for example, criteria for the PTSD diagnosis have gradually expanded to allow greater weight to the subjective experience of trauma. The resulting "bracket creep" (McNally, 2003) may have had unintended consequences of reducing the validity of the diagnosis. Additionally, and perhaps more importantly, the nearly exclusive focus on pathology tells us relatively little about other nonpathological responses to PTEs. Put differently, pathological categories are uninformative about the shape and characteristics of the distribution of nonpathological responses. In particular, as we discuss further in the following text, the simple binary distinction between pathology and the absence of pathology treats all individuals who are nonpathological as similar and says almost nothing about what normal resilience might look like (Bonanno, 2004).

The Event (Average Impact) Approach

A second common approach to PTEs has been to compare averaged data from exposed and nonexposed samples so as to estimate the duration of posttraumatic impact. The use of average data in an event-focused analysis can be productive in several ways. For example, average data provide a ready statistic for comparing across diverse types of PTEs. Average data are also useful in determining within-group predictors of grief or posttraumatic outcome, and can be particularly informative for meta-analytic comparisons across multiple studies (e.g., Norris et al., 2002).

The event approach and the use of average data also have key limitations. Like the diagnostic approach, the event approach provides relatively little information about the distribution of nonpathological reactions or about the prevalence of resilient outcomes. Indeed, the event approach can potentially lead to inaccurate conclusions. This happens, for example, when average-level responses are assumed to represent the modal outcome. Errors of this type are especially

prominent in longitudinal analyses because the statistical average rarely captures typical outcome patterns (Bonanno et al., 2011). In the absence of more detailed data as we discuss hereafter, the statistical average fails to capture the diversity of long-term reactions people exhibit when confronted with PTEs.

DEFINING RESILIENCE

In contrast to the diagnostic and event approaches, a growing body of research and theory has begun to emphasize individual differences in response to potential trauma. This research has convincingly demonstrated that long-term outcomes following PTEs can be explained by a relatively proscribed set of prototypical outcome trajectories. Most prominent among these is the outcome pattern we refer to in this article and elsewhere as the resilience trajectory (Bonanno, 2004; Bonanno et al., 2010; Bonanno et al., 2011).

More Than the Absence of Pathology

We present our definition of resilience by first considering what resilience is *not*. Over the past decade, the term "resilience" has gained considerable currency among students of traumatic events. Unfortunately, several different and often confusing definitions of the term have proliferated, often used interchangeably. *Resilience* is sometimes defined, for example, as the absence of diagnosable psychopathology (e.g., Feder, Nestler, & Charney, 2009). Although this kind of binary definition appears to offer a new perspective on adjustment, it is in fact no different than the traditional psychopathological approach described earlier. The variables that predict an absence of pathology in a binary system, for example, will always be the same variables that predict pathology; only the direction of prediction changes. To state this differently, as Almedom and Glandon (2007) have noted, defining resilience as the absence of a disorder is akin to defining health as the absence of disease. Either approach offers only a limited understanding of the concept.

Children Versus Adults, Chronic Versus Acute Stressors

Much of the original theorizing on resilience came from developmental research-ers and theorists during the 1970s. These pioneering investigators repeatedly documented large numbers of children who despite growing up amidst aversive circumstance nonetheless managed to meet normal developmental milestones (Garmezy, 1991; Murphy & Moriarty, 1976; Rutter, 1979; Werner, 1995). It is crucial to note, however, that most of this original developmental evidence focused on chronic adversity, such as corrosive socioeconomic circumstances (e.g., poverty) or chronic abuse. When eventually the concept of resilience "trickled up" to the adult literature, the focus shifted to the study resilience in the

face of more isolated, acute life events, such as PTEs. Although it is not entirely clear why the research took this historical path, ironically for the most part, current research has retained this simple bifurcation. Children are exposed to acute life events, such as disasters, with nearly the same frequency as adults. Yet there has been surprisingly little research on how children respond to acute life events (La Greca, Silverman, Vernberg, & Roberts, 2002). By the same token, adults are often exposed to chronic adversity, but again the research on adults has tended to focus more squarely on isolated PTEs (Bonanno et al., 2011). It is plausible that comparable research on resilience during or following chronic adversity may reveal dramatic variations in prevalence rates. In a recent population-based study conducted among Palestinians in the West Bank and Gaza, for example, where chronic mass casualty is exceptionally high, resilience outcomes were markedly reduced (Hobfoll, Mancini, Hall, Canetti, & Bonanno, 2011).

The Limitations of Resilience Questionnaires

As research on resilience spread to adult populations, several self-report measures of resilience were developed (e.g., Connor & Davidson, 2003). On the surface, this development appears to make sense. Self-report measures are simple to use and easy to incorporate into just about any research design and in theory could greatly advance research on resilient adjustment. However, upon closer inspection, the utility of self-report resilience scales becomes questionable. For one reason, resilience scales appear to assume that people are resilient primarily because of who they are (i.e., a resilient type). It is certainly possible, of course, that resilience may be a measureable traitlike construct. However, as Mischel (1969) famously pointed out decades ago, personality rarely explains more than a small portion of the actual variance in people's behavior across situations. Studies of personality variables in relation to PTEs similarly tend to show relatively small effects (e.g., Bonanno, Rennicke, & Dekel, 2005; Bonanno et al., 2004). Given that several personality dimensions have already been associated with resilient outcomes (see Bonanno et al., 2011), the measurement of new resilient traits will not likely add further to the existing corpus of evidence unless these measures can be shown to have incremental validity. In other words, to be useful a resilience questionnaire must tell us something more than what can be gained by using established personality measures or methods. For the most part, this type of evidence has not been provided, and it is our suspicion that such evidence will not likely be forthcoming.

Resilience as a Stable Trajectory of Healthy Functioning

In the context of and in part because of these pitfalls, our research team has operationally defined resilience exclusively in terms of measureable long-term outcomes, and whenever possible using prospective (i.e., pre- to post-event) data.

Within the context of this caveat, then, resilience can only be observed in response to some form of serious adversity. We consider an outcome as evidence of resilience when a person has experienced an extreme adversity but nonetheless still managed to maintain *a relatively stable trajectory of healthy functioning and positive adaption* (Bonanno, 2004). It is important to note that resilience does not necessarily connote a complete absence of a stress response, which has been referred to as *stress resistance*. To the contrary, even resilient individuals tend to experience at least some transient distress during or in the immediate aftermath of the PTE. Importantly, however, for resilient individuals, these reactions are usually mild and transient and tend not to interfere with their ongoing ability to function (Bonanno, 2004). Moreover, whereas complete stress resistance appears to be relatively rare, the transient stress associated with resilience is typically the most common outcome observed (Bonanno, 2004; Bonanno et al., 2010).

RESILIENCE AND OTHER OUTCOME TRAJECTORIES

Although it is now widely recognized that there is substantial interindividual variability in people's capacity to cope with acute stressors across time, a crucial question regarding this variability is how to represent it conceptually. In effect, this question hinges on whether variability in stress response is best modeled as one overall population or as a mixture of subpopulations that displays distinct response patterns across time. Historically, it was assumed that this variability conformed to a *homogeneous* distribution and one overall population. If this is the case, responses to PTEs could, in theory, be arrayed along a single normal distribution that encompassed resilience on one end and psychopathology on the other. A pattern of recovery from initially acute symptoms would then represent the mean (and the modal) response pattern.

Although these assumptions were reasonable, research and theory now increasingly indicates that variability in stress responding does not conform to a single homogeneous distribution. Instead, human stress responses appear to be characterized by marked *heterogeneity*, with multiple and often divergent trajectories of response emerging following a PTE. Indeed, recent theoretical and empirical advances have mapped this heterogeneity on to four prototypical outcome patterns following exposure a PTE (Bonanno, 2004). Resilience is characterized by transient symptoms, minimal impairment, and a relatively stable trajectory of healthy functioning even soon after the PTE; *recovery* is distinguished from resilience by elevated symptoms and some functional impairment after the PTE followed by a gradual return to normal levels of functioning; *chronic* distress is characterized by a sharp elevation in symptoms and in functional impairment that may persist for years after the PTE; finally, *delayed* distress is characterized by

moderate to elevated symptoms soon after the PTE and a gradual worsening across time. Other trajectories that are also sometimes observed include enduring impairment that pre-dates the PTE (*continuous distress*) and elevated distress prior to the PTE that decreases markedly after the event (*distress improvement*; Bonanno et al., 2002). In longitudinal research on PTEs, some of which includes pre-event data, these patterns have emerged following widely varying stressors, including terrorist attack (Bonanno, Rennicke, et al., 2005), bioepidemic (Bonanno et al., 2008), bereavement (Bonanno et al., 2002; Mancini, Bonanno, & Clark, 2011), traumatic injury (deRoon-Cassini, Mancini, Rusch, & Bonanno, 2010), and breast cancer surgery (Lam et al., 2010). Whether a person displays one trajectory or another depends on many different factors: spanning person-centered (e.g., personality, coping style), contextual (social support, additional life stressors), and event-specific (degree of exposure, severity) predictors. We elaborate on these outcome patterns on the the following texts and on the research associated with them.

Resilience

Resilience is sometimes presumed to imply total stress resistance, an unusual capacity to experience no disequilibrium following a PTE. To the contrary, however, most resilient persons certainly experience at least some distress and upset following the acute stressor. Moreover, given the prevalence of resilience, which typically characterizes 35%–65% of exposed samples, an obvious implication is that resilient persons are healthy but not necessarily supercopers. Rather, despite their transient distress, which may last for hours or days, it is more accurate to say that resilient persons simply carry on with their daily lives. They work, engage in social activities, and perhaps most important, experience intimacy and enjoyment. They also report a sense of underlying continuity in their sense of themselves, a belief that they retain the qualities that make them who they are (Mancini, Bonanno, et al., 2011). An additional hallmark characteristic of resilient persons is their capacity for generative experiences and positive emotions despite adversity (Bonanno, 2004).

Recovery

The recovery trajectory describes moderate elevations in distress soon after the event that gradually subside over time, a pattern that traditionally was assumed to be the typical or modal reaction to acute stress. Evidence increasingly indicates, however, that the recovery trajectory is relatively infrequent, characterizing only a minority of people following a PTE, usually 15%–25% of persons (Bonanno et al., 2002; deRoon-Cassini et al., 2010). In contrast to resilience, persons who exhibit the recovery trajectory will typically report moderate levels of symptoms, including intrusive thoughts about the event, dysphoric affect, and yearning (in the case

of bereavement). These experiences can last for a few months to a year or longer after the event, before gradually returning to the person's normal level of functioning. Several studies have now mapped recovery as a distinct trajectory, one that is separable from resilience and chronic distress and that is associated with distinct predictors (e.g., Bonanno et al.; deRoon-Cassini et al.).

Chronic Distress

Traditionally, it was assumed that PTEs produced substantial degrees of psychopathology among exposed persons. As epidemiological research on acute stressors has burgeoned, however, it has become clear that chronic psychopathology following exposure to a PTE is relatively rare. PTSD is typically observed in only 5%–10% of exposed individuals. However, when exposure is more prolonged or severe, the proportion exhibiting PTSD or other types of psychopathology may reach higher levels but will rarely exceed 30% of the sample (Bonanno et al., 2010; deRoon-Cassini et al., 2010). For example, following the September 11th terrorist attack, the chronic PTSD prevalence was estimated at 6% among a representative sample of 2,752 New Yorkers interviewed in the months following (Bonanno, Galea, Bucciarelli, & Vlahov, 2006). This proportion rose to 26%, however, among those physically injured in the attack. Studies of psychopathology during bereavement suggest similar proportions. Typically, only about 10%–15% of bereaved people will exhibit chronically elevated grief reactions (Bonanno et al., 2002; Mancini et al., 2011).

Delayed Reactions

Delayed-onset reactions to PTEs have stirred controversy and debate. Prevalence estimates for delayed PTSD have varied wildly, from 0% to 68% (Andrews, Brewin, Philpott, & Stewart, 2007). Some commentators have questioned whether it exists at all. Nevertheless, empirical studies that have mapped PTSD symptoms over time have in fact observed a subset of persons who show delayed elevations in the direction of the diagnostic threshold for PTSD (e.g., deRoon-Cassini et al., 2010). Contrary to the traditional view of delayed trauma as characterized first by a complete absence of symptoms and then a sudden "out of the blue" emergence of trauma symptoms, empirical studies of delayed PTSD suggest a moderate or subthreshold level of difficulty that gradually worsens to threshold-level pathology (Bonanno, 2004). Indeed, a recent review of the literature on delayed PTSD concluded that delayed-onset PTSD is attributable to an exacerbation of existing symptoms (Andrews et al.). Delayed grief during bereavement has similarly been a source of theoretical controversy. However, in contrast to PTSD, longitudinal bereavement research has yet to offer persuasive documentation of delayed grief.

Preexisting Continuous Distress and Distress Followed by Improvement

The four trajectories described earlier have been observed across a range of PTE studies. However, prospective research has shown that in some contexts, additional growth trajectories may be observed. Two particularly intriguing patterns have been identified, for example, in cases when symptoms and distress were found to be elevated prior to the onset of a PTE. One pattern is characterized by persistently elevated symptoms and distress that were evident well before a PTE's onset and continued well after the occurrence of PTE. This pattern has been reported for example in studies of loss (Bonanno et al., 2002; Bonanno, Moskowitz, Papa, & Folkman, 2005; Mancini et al., 2011) and terrorist attack (Bonanno, Rennicke, et al., 2005).

A second and particularly intriguing trajectory occurs when individuals experience elevated symptoms and distress prior to the event but then improvement soon after the event's occurrence. Importantly, this pattern is not necessarily associated with growth or enhanced functioning, but rather is best characterized as a return to normative levels of functioning. This type of distress-improvement pattern has been identified in research on loss following chronic illness (Bonanno et al., 2002), divorce (Mancini et al., 2011), and military deployment (Dickstein, Suvak, Litz, & Adler, 2010).

LATENT GROWTH MODELING

Early investigations of the outcome trajectories described earlier employed relatively rudimentary methods, using a priori cut points and existing theory to group participants into theoretically derived response patterns. Although these early studies demonstrated distinct trajectories of response to PTEs there were important methodological limitations. One limitation is their reliance on basic distribution data (e.g., a single mean and standard deviation) to derive patterns of trajectory change (e.g., Bonanno et al., 2002), which may have distorted the nature of the underlying variability. A more critical limitation is that using a priori cut points is inherently arbitrary. The trajectories are necessarily imposed on the data rather than emerging directly from the data, making it impossible to know whether naturally occurring distinctions are being identified. Although subsequent research has largely supported the findings of the initial research, the use of predetermined theoretical definitions also necessarily limited opportunities to identify novel or event-specific patterns of outcome.

More recent research on trajectories has employed *latent growth mixture modeling* (LGMM), a suite of statistical techniques derived from structural equation modeling. In contrast to early trajectory research, LGMM does not rely on

a single homogenous response pattern. By relaxing the assumption of a single population, LGMM is able to identify distinct response patterns across time. The key feature of LGMM is that these patterns are primarily identified on an empirical basis with minimal reference to a priori assumptions, that is, the patterns emerge according to the distributional properties of the data themselves. The appropriate number of trajectory classes is determined primarily by fit statistics, which provide an index of the parsimony inherent in a given class solution, as well as by existing theory and interpretive rationale. The LGMM approach is particularly valuable for its capacity to identify relatively infrequent and often event-specific response patterns. For example, although delayed PTSD reactions are widely thought to occur, prior research has offered wildly varying estimates of their prevalence, primarily because researchers have employed different definitions of what constitutes delayed PTSD. Along with our colleagues, we recently used LGMM to identify a delayed PTSD based purely on the data and without recourse to arbitrary cut points or definitions (deRoon-Cassini et al., 2010), illustrating a critical strength of LGMM in advancing our understanding of stress responding.

Along with our collaborators, we have applied LGMM to an array of acute stressors, spanning relatively common experiences, such as unemployment (Galatzer-Levy, Bonanno, & Mancini, 2010), divorce, and marriage (Mancini et al., 2011), to more extreme and acute events, such as traumatic injury (deRoon-Casini et al., 2010), bereavement (Mancini et al., 2011), breast cancer surgery (Lam et al., 2010), bio-epidemic (Bonanno et al, 2008), and military deployment (Bonanno, Mancini, et al., in press). Although this work encompassed widely varying events and measurement strategies, as well as both longitudinal and prospective designs, the trajectory patterns that emerged mapped to a considerable degree on to the prototypical trajectories identified using more primitive statistical techniques. Moreover, the findings across studies strongly confirmed the ubiquitous nature of resilience, with a substantial majority showing a stable trajectory of healthy functioning and adjustment. For example, we have identified the resilient trajectory among bereaved spouses, 58.7% (Mancini et al.); divorced persons, 71.9% (Mancini et al.); persons admitted for surgery following traumatic injury, 59.2% (deRoon-Cassini et al.); breast cancer surgery survivors, 66.3.% (Lam et al.); hospitalized survivors of the SARS epidemic, 35% (Bonanno et al.); unemployed persons, 66.8% (Galatzer-Levy et al.); and deployed soldiers, 63% (Bonanno, Mancini, et al.). In the context of LGMMs methodological strengths, these findings provide further and particularly compelling evidence that resilience is a robust phenomenon emerging in response to widely varying stressful experiences.

PREDICTORS OF THE RESILIENCE TRAJECTORY

Traditional perspectives on PTE outcome viewed resilience to be a rare phenomenon. Consequently, in these models, resilient individuals were seen either as extraordinarily healthy or as aberrant and thus pathological (Bonanno, 2004, 2009). By contrast, the abundant evidence that resilience is not rare but rather the modal outcome trajectory following a PTE suggests a dramatically different interpretation. Given the large numbers of people evidencing resilience, we should expect considerable heterogeneity and, as a result, that there should be multiple, independent predictors of resilient outcomes. Developmental researchers have, for decades, noted that children who are able to reach normal developmental milestones despite corrosive life circumstances appear to rely on a range of resilience-promoting factors, including person-centered variables (e.g., personality) and sociocontextual factors (e.g., supportive relations; Masten, 2001). The same holds true for both children and adults confronted with PTEs. Resilience to extremely aversive events does not stem from any one dominant factor. Rather, multiple risk and resilience factors coalesce in a cumulative or additive manner, each contributing or subtracting from the overall likelihood of a resilient outcome (Bonanno, 2004; Bonanno, Galea, Bucciarelli, & Vlahov, 2007). Some of these factors are likely to be relatively stable over time, such as personality variables, whereas others will tend to fluctuate with changing life circumstances or changes in the availability of resources (Hobfoll, 1989). In other words, each time a PTE occurs, a person may be more or less likely to be resilient, depending on their recent history and the broader context of their lives.

Although research that explicitly defines a resilience outcome trajectory is relatively new, several unique predictors have been identified. In the most methodologically sound studies—those using multivariate or prospective designs—resilience has been associated with differences in demographic factors such as male gender, older age, and greater education; level of trauma exposure; personality variables such as low negative affectivity, perceived coping self-efficacy, trait self-enhancement, social and economic resources, past and current stressors, a priori positive world views; and the capacity for positive emotions (for reviews, see Bonanno et al., 2010, 2011).

RESILIENCE ACROSS THE LIFE SPAN

Of particular relevance to this volume is the question of age. It is widely assumed that age exerts an inverse curvilinear impact on coping with adversity, such that both older adults and young children are at greatest risk for serious psychological and health problems and thus less likely to exhibit resilient outcomes. The available data do *not* support this view. In their review of the disaster literature until

2002, for example, Norris and colleagues (2002) concluded that children consistently exhibited more extreme psychological impairment and less frequently had minimal psychological impairment compared to adult disaster survivors. However, many of the earlier studies on disaster were methodologically heterogeneous and frequently produced mixed or even contradictory findings (see Bonanno et al., 2010). Moreover, across a wide range of studies, despite their vulnerability, children have typically exhibited a natural resilience in the aftermath of extreme adversity (Masten, 2001). It might be that the sweeping threat of disaster provides a special case that puts children under unusual risk. However, in the most recent disaster studies that have generally employing more sophisticated methodologies, the rates of resilience and pathology observed in children were similar to those observed in adults (Bonanno et al., 2010). Of particular relevance to this issue, in a recent study of children hospitalized for potentially traumatic injuries that explicitly mapped longitudinal outcome patterns, more than half the youth sampled evidenced a clear resilient trajectory (Le Brocque, Hendrikz, & Kenardy, 2010).

At the opposite end of the age spectrum, older adults have been assumed to be at risk for more adverse reactions, especially in the context of disaster where their relative lack of mobility, dependence on others, and potential for deprivation and physical injury put them at clear risk. In striking contrast to this view, however, older adults typically experience fewer psychological costs during and after disasters compared to their younger counterparts (see Bonanno et al., 2010; Huerta & Horton, 1978; Knight, Gatz, Heller, & Bengtson, 2000). Indeed, in one of the few studies that directly examined age in relation to explicitly defined outcome trajectories, among New Yorkers in the first 6 months of the 9/11 attack, older adults were more likely to be resilient than were younger adults (Bonanno et al., 2007). These kind of reverse age effects have been attributed in part to older adults' greater life experiences and greater prior experience in particular with disaster (Knight et al., 2000) and may also reflect older adults' increased capacity to regulate negative emotion (Charles & Carstensen, 2010).

TOWARD A BROADER MODEL OF RESILIENCE IN OLDER ADULTS

There has been relatively little research on resilience, defined specifically as an outcome trajectory, in relation to older adults. In the next section, we consider several potential mechanisms that merit consideration in future trajectory studies on resilience in older adults. In doing so, we explicitly relaxed the methodological criteria of the preceding sections and in this final section consider a broader range of research and evidence. Specifically, we review emerging evidence for

age-related changes in emotion regulation and positive affect and discuss selected sociocultural variables that may influence coping with stressors that are particularly common in later life, bereavement, and caregiving.

Emotion Regulation and Positive Affect

Paralleling the shift from outdated models of resilience as rare and pathological to a more differentiated and empirically grounded view of resilience as presented in this article, recent research has called into question unidimensional models of aging that overemphasize physiological and cognitive deterioration. There is growing evidence that contrary to expectations of inevitable decline, older adults tend to experience relatively high levels of life satisfaction and emotional well-being, a phenomenon that has been labeled as the "aging paradox" (Charles & Carstensen, 2010).

Research documenting age-related cognitive decline has traditionally focused on specific domains of fluid intelligence such as psychomotor speed and word fluency that are easily demonstrated in the laboratory but have been shown to have remarkably small consequences for older adults' everyday functioning (Salthouse, 2012). More relevant to understanding positive adjustment in elders at a global level appear to be changes in social and emotional functioning that counterbalance the effects of age-related losses (Charles & Carstensen, 2010). According to socioemotional selectivity theory, emotion-related goals such as pursuing meaningful activities and relationships become more salient with advancing age and accompanying limited time perspective (Carstensen, 2006). These changes in priorities predispose people to entertain thoughts and select actions that minimize exposure to negative situations and, in some cases, maximize occurrence of positive events (e.g., by regulating social triggers of emotion through increased selectiveness in choosing social partners). Thus, several studies have found that compared to younger adults, older people appear to be better at regulating their emotional experience, show biases in attention and memory for positive social material, appraise their social environments as more benign, and show greater skill at managing difficult interpersonal situations (see Charles & Carstensen for a review). In consequence, they tend to experience lower levels of interpersonal stress (Birditt & Fingerman, 2003) and tend to exhibit less intense emotional reactions to tense social situations than younger adults (Birditt, Fingerman, & Almeida, 2005). These data suggest obvious parallels to literature on individual differences in emotional flexibility in younger and middle-aged adults, which in turn has been liked to favorable adjustment in the face of loss (Gupta & Bonanno, 2011) and potential trauma (Bonanno et al., 2004; Westphal, Seivert, & Bonanno, 2010). Together, these findings suggest that similar individual differences may characterize patterns of emotional flexibility in older adults.

In a related vein, other research has suggested that age-related improvements in emotion regulatory ability may impart emotional and health benefits at least in part by increasing positive affective experiences. For example, several studies have shown that the ratio of positive to negative affect tends to increase linearly with age, and greater positive affect has been found to predict lower mortality across a 13-year period (see Charles & Carstensen, 2010). Given compelling experimental and longitudinal evidence for the adaptive benefits of positive emotion in everyday life and in response to PTEs (Papa & Bonanno, 2008), we consider it very likely that positive emotion may also be a key mechanism underlying resilience to PTEs in older adults. A recent prospective study showing that changes in positive emotion mediated the impact of bereavement on cortisol dysregulation in older adults provides strong evidence for this idea (Ong, Fuller-Rowell, Bonanno, & Almeida, 2011).

The ability to experience positive emotion in the context of interpersonal relationships is likely an especially important component of late-life resilience. Positive emotions in relationships foster social engagement (Keltner & Bonanno, 1997; Papa & Bonanno, 2008), which in models of healthy aging is viewed as a potent buffer against emotional distress and physical illness (Rowe & Kahn, 1987). Although not specifically focused on resilient outcome trajectories in the context of severe adversity, developmental life-span perspectives on cognitive and socioemotional mechanisms underlying adaptation to age-related stressors (e.g., Baltes & Smith, 2003; see Depp, Vahia, & Jeste, 2010 for a recent review) may provide a useful framework from which to further investigate resilience in response to PTEs and chronic stressors.

The Role of Culture

Another promising area for future research on resilience in older adults concerns the role of cultural factors. Given projected changes in demographics across the world, research incorporating sociocultural variables in modeling outcome trajectories would appear timely and necessary to gain a more comprehensive understanding of resilience. Unfortunately, to our knowledge, no published study has explicitly mapped longitudinal outcome patterns in older adults from different ethnic groups using subsamples sufficiently large to permit cross-cultural comparisons.

There is some preliminary evidence suggesting differences in the adaptiveness of certain coping strategies in collectivist societies that define the self in relation to the broader community as compared to individualistic societies that value autonomy and self-reliance. For example, western countries with individualistic orientations tend to value personal, internalized experiences of grief, whereas public or ceremonial expressions of grief appear more typical

in collectivist countries. In one comparative study (Bonanno, Papa, Lalande, Zhang, & Noll, 2005), bereaved people in China generally recovered faster than did their American counterparts. In China, bereaved people who reported a continuing psychological bond with the deceased also coped better than those who did not, whereas in America, the reverse was true. These findings support the notion that adaptation may be influenced by cultural norms that specify what constitutes appropriate grieving. The lack of adaptive benefits of maintaining a psychological bond with the deceased in the American sample may reflect an individualistic model of self as "bounded and interior" that frames continued bonds with deceased as pathological rather than as normative (Bonanno, Papa, et al., 2005).

Coping with chronic and acute illness is another area where consideration of cultural norms might help elucidate differential responses to adversity in future trajectory research. Several cross-sectional studies suggest that negative stereotypes of aging may affect elder adjustment by shaping societal attitudes and behaviors toward older adults (Pasupathi & Löckenhoff, 2002). For example, lowered expectations of functioning held by health care providers and family may affect longevity via internalized negative self-perceptions of aging that discourage engagement in preventive health behaviors.

Ageism is thought to be more prevalent in Western societies than non-Western societies (e.g., Hummert, 1990; Kite, Deaux, & Miele, 1991) and may lead to perceived loss of control and lowered self-esteem (Rodin & Langer, 1980). In contrast, multiple studies have linked Confucian values of filial piety and respect for ancestors in Asian societies to enhanced self-esteem in elders and more benign societal views of aging. Filial norms may also influence coping with developmental tasks such as providing care to a frail spouse or parent in later life. According to sociocultural adaptions of the caregiver stress model, cultural values affect emotional distress by influencing appraisals of caregiving (Aranda & Knight, 1997). In interdependent cultures, caregiving is more likely to be perceived as a natural extension of family life as opposed to presenting a burden, as is typical in more individualistic cultures such as the United States (Zarit, Reever, & Bach-Peterson, 1980). Several studies have shown that African American caregivers tend to view caregiving as less burdensome than White caregivers and tend to experience greater satisfaction with the caregiving roles and lower levels of depression compared to nonminority caregivers (see Aranda & Knight, 1997, for a review).

Familism is considered as a key cultural concept that might explain differences between the United States mainstream and minority cultures in response to caregiving. *Familism* refers to an emphasis on family concerns as overriding the concerns of the individual and view of nuclear and extended family as the principal

source of support (Sabogal, Marín, Otero-Sabogal, Marín, & Perez-Stable, 1987). Although familism was originally perceived as protective, more recent research suggests that it might actually increase stress and adverse mental health outcomes in minority caregivers, possibly owing to value and role conflicts experienced during acculturation (Youn, Knight, Jeong, & Benton, 1999). Familism may likewise instill a sense of obligation to provide care to a family member with dementia while increasing reluctance to use formal support services (Escovar & Kurtines, 1983).

Although biologically based changes associated with the normal aging process that increase susceptibility to chronic illness and disability are more or less invariable across cultures, there appears to be considerable scope for cross-cultural variability in response to age-related adversity. Cross-national comparisons and research involving ethnically diverse samples offer unique opportunities to advance knowledge of multivariate predictors and correlates of resilient outcomes in future trajectory research. In comparing how individuals cope with both acute and chronic stressors across the life span in different countries, it will also be important to consider differences in socioeconomic development and health care systems that are likely to moderate the effects of individual difference and cultural variables on adjustment.

Finally, it is important to consider the possibility of cross-cultural differences in the meaning of loss, trauma, and resilience. In response to the 2004 tsunami disaster that stunned Southeast Asia, for example, Western mental health professionals flooded the region on the assumption that mass psychological causalities would be evident and that immediate psychological intervention was a pressing need. In retrospect, the resilience exhibited by the indigenous populations suggested that Westerners may have been "exporting trauma" to the region (Miller, 2005, p. 1032). Indeed, as one psychiatrist in the region recounted, "we did a needs assessment where we asked people what they needed, [and] counseling was the last thing they checked, and probably on because we'd mentioned it" (Miller, 2005, p. 1032). The same ambiguity may also apply to the concept of resilience. As Tweed and Conway (2006) argued "the very idea of what makes a good 'outcome' is itself subject to cultural variability, and researchers should be wary of over-applying particular measures of psychological coping success (e.g., increases in self-esteem) in cultures where these measures have less meaning for that purpose" (p. 148).

A CAUTIONARY LOOK AT RESILIENCE-BUILDING INTERVENTIONS

Inspired in part by the recent surge of research and theory on resilience, there has been a great deal of interest in developing and implementing prophylactic interventions that might foster resilience in the general population. In this

final section, we suggest that much of this work is premature, that greater research on resilient outcomes is still needed, and that caution and a more careful, incremental approach should characterize such efforts.

One imperative concern that has plagued many broad-based attempts to inculcate resilience is their failure to articulate a clear conceptual foundation about the aims and consequences of the interventions. As the studies we reviewed attest, many and often most people exposed to PTEs are likely to evidence resilient outcomes. Given these findings, then it is imperative to ask, "who precisely are resilience-building programs designed to influence?" More importantly, if most people are resilient, is it not clear how people who might otherwise have shown resilience might respond to resilience-building interventions. Indeed, it is entirely possible that such interventions might inadvertently reduce the prevalence of healthy outcomes. In other words, resilience-building interventions actually render people who were likely to have shown a stable trajectory of healthy functioning less resilient. As we have argued in more detail elsewhere, this untoward outcome may occur because resilience building programs may inadvertently cause people who would otherwise have adapted adequately to question their own resilience, or to inappropriately downgrade their expectations of risk and thereby to behave in a riskier or more careless manner, or because resilience building programs may stigmatize normative distress reactions (Bonanno et al., 2011).

We propose that a more measured and arguably more logical approach would be to first identify sets of factors that have been shown, through longitudinal and prospective research, to predict resilient outcomes and then to develop methods to foster these factors in individuals in whom they are lacking. A first concern in such program would be to narrow the targeted behaviors to those most likely to inculcate adaptation to PTEs. The available research shows quite clearly however that this is not a simple issue. As we have reviewed here and elsewhere, resilient outcomes are not the product of one or even several primary factors. Rather, there are multiple risk and resilience factors that coalesce in a cumulative or additive manner, each contributing or subtracting from the overall likelihood of a resilient outcome. Given this scenario, then, it is debatable whether targeting one or even several possible resilience factors will likely result in much of a change.

It is also worth nothing in this context that relatively few of the factors thus far identified as predictors of resilient outcomes are actually malleable in any realistic sense. Many resilience factors are associated with resources, such as level of education or economic viability. Even the most ambitious and well-funded efforts have found these dimensions difficult to alter. The available research does however indicate several psychological variables, such as affectivity, perceived

coping self-efficacy, worldviews, coping and emotional flexibility, and positive emotion that might serve as optimal targets for exploration in resilience building efforts. As far as we are aware, however, relatively little research has yet investigated the ways in which these dimensions might be enhanced in older adults exposed to extreme adversity. Research on interventions that aim to promote positive changes in trajectories of normal aging underscores the challenges of designing and implementing interventions that are both effective and sustainable on a large scale (Depp et al., 2010).

A second as yet unresolved concern is whether resilience building is best achieved prophylactically by administering interventions to entire populations or in a more stepwise manner that first involves pretesting for individuals most at risk (or simply lacking in the targeted behaviors) and then tailoring the intervention more specifically to this group. This is an obviously crucial empirical question but has yet to be addressed (Bonanno et al., 2010, 2011). Finally, as we suggested earlier, all resilience-building program should consider the cultural background of its recipients and whether the aims of the program might conflict with or enhance its recipient's natural understanding of both potentially traumatic events and mental health.

In the context of these considerations, we conclude by emphasizing the crucial need for continued systematic and thoughtful research on resilient outcomes in the face of loss and potential trauma and on the factors that promote or deter from those outcomes. As data of this nature are systematically accrued, researchers and theorists will be in a better position to develop and evaluate which resilience building efforts if any are most likely to succeed, in what contexts, and in which individuals.

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CHAPTER 11

Emerging Perspectives on Resilience in Adulthood and Later Life

Work, Retirement, and Resilience

Harvey L. Sterns and Nicole T. Dawson

ABSTRACT

Continued employment of the adult and older adult worker requires resilience in response to growing levels of workplace, demand, and adversity. Four patterns of resilience are considered including dispositional, relational, situational, and philosophical. Life span theory and approaches to developmental change are discussed in the context of resilience and working in later life. Changes in work demands, health, injury and disability, skills and abilities needed, employment and reemployment, organizational culture, as well as worker purpose and fulfillment are included in this overview.

INTRODUCTION

Older adults are living longer than ever before, and the U.S. population of older adults will easily double by 2050. Improved health and longevity are allowing older adults the option to remain in the workforce longer and postpone retirement. Many older adults are seizing this opportunity as reflected by trends in workforce demographics. In 2003, 14% of Americans older than the age of 65 years worked in the civilian labor force. This number has steadily increased

in 2005 and 2010 to 15.1% and 17.4%, respectively (U.S. Department of Labor [USDOL], 2010). Although staying in the workforce can bring forth fulfillment and improved self-esteem, there are also many challenges that older adults will face during their continued employment. "The notion of providing tools, resources, and supportive frameworks, which assist a worker to respond to and meet changing environmental demands, be they in their place of work or external, may be viewed as engendering resilience" (McLoughlin, Taylor, & Bohle, 2011, p. 125).

Defining Adult and Older Adult Workers

In defining the adult and the older adult worker, Sterns and Doverspike (1989) suggested five general approaches: chronological/legal, functional, psychosocial, organizational, and life span orientation.

By the chronological/legal approach, the distinction between older and younger workers is most frequently chronological age. Although little theoretical justification is offered for the age ranges, it seems to follow the legal definition of age. The Age Discrimination in Employment Act (ADEA) of 1967, amended in 1978 and 1986, protects workers older than the age of 40 years. Another commonly used cut-off point comes from the Job Training Partnership Act and the Older Americans Act. Both recognize people aged 55 years and older as adult and older adult workers.

The functional approach is a performance-based definition of age and recognizes that there are many individual variations in abilities and functioning at all ages. As chronological age increases, individuals go through various biological and psychological changes, including declines, as well as gain increased experience, wisdom, and judgment. Individuals can be identified as "younger" or "older" than their chronological age, based on objective measures of their performance. Despite these criticisms of the concept, different approaches and definitions of functional age continue to exert their influence on the field. Alternative approaches propose a more traditional methodology drawn from industrial psychology that emphasizes appropriate assessment strategies and the design of measures that assess attributes directly related to job performance.

Psychosocial definitions of adult and older adult workers are based on social perceptions, including age typing of occupations, perceptions of the adult and older adult worker, and the aging of knowledge, skill, and ability sets. The individual's self-perception is also considered. How individuals perceive themselves and their careers at a given age may be congruent or incongruent with the societal image of age.

The organizational view of adult and older adult workers recognizes that the effects of age and tenure are necessarily related and that individuals age in

both jobs and organizations. An adult and older adult worker often has spent substantial time in a job and substantially more time in an organization. A definition of adult and older adult workers based on the aging of individuals in organizational roles is more commonly discussed under the topics of seniority and tenure.

Finally, the life span approach borrows from a number of the previously described approaches but adds its unique emphasis. It advances the possibility for behavioral change at any point in the life cycle. Substantial individual differences in aging are recognized as critical in examining adult career patterns. In using these definitions of older worker, one must realize the different implications of each. The older adult's ability to work and adapt to a changing environment, or to retire, is based on which definition of older work is applied. The life span approach will be used in this chapter.

This chapter will outline the concept of resilience and how it pertains to the older worker, as well as discuss multiple dimensions of the workplace responsible for presenting workplace adversity. Different strategies by the older worker, coworkers, and managers will be discussed that may facilitate resilience and enable successful performance in the workplace. Finally, different conceptualizations of retirement will be introduced and outlined in terms of the resilient older worker.

There is a significant body of literature outlining age-related deficits that older workers have to overcome in order to successfully remain in the workforce (Rothwell, Sterns, Spokus, & Reaser, 2008). Some of these adverse stressors include changes in cognitive capacity, sensory decline, musculoskeletal decline, and motor deficits. Older workers must also contend with their changing roles in the workforce as well as potentially confounding roles at home, such as caregiver. Changes in work environment may also increase level of adversity for the older worker. Not only can the physical environment pose as stressors but also attitudes of supervisors and coworkers.

The ability of these older workers to successfully perform job-related tasks in the face of growing levels of adversity is a classic example of resilience. Resilience has been described by many authors with different conceptualizations. For the purpose of this chapter, resilience will be defined as the ability of an individual to adjust to adversity, maintain equilibrium, retain some sense of control over their environment, and continue to move on in a positive manner (Jackson, Firtko, & Edenborough, 2007). Polk (1997) described four patterns of resilience that translate well to the older worker: dispositional pattern, relational pattern, situational pattern, and philosophical pattern. The dispositional pattern describes physical and ego-related psychosocial attributes of an individual that lend to resilience, including personality traits such as optimism, extraversion,

humor, and autonomy. The relational pattern refers to different characteristics of relationships and role that may influences one's resilience including social support networks. The situational pattern is considered an individual's approach to a given situation that is exhibited through cognitive appraisal skills and problem-solving ability. Finally, the philosophical pattern refers to an individual's personal beliefs such as defining one's purpose in life.

A relationship between resilience and working in late life is easily developed. Staudinger, Marsiske, and Baltes (1995) use the concept of "developmental reserve capacity" that may be activated under certain conditions as a mechanism for older workers to maintain productivity, independent functioning, and levels of well-being. In life span theory, *reserve capacity* refers to the degree of plasticity that an individual may display when dealing with developmental challenges and demands. Both internal resources (health status or cognitive abilities) and external resources (monetary resources or social support) are considered when assessing reserve capacity. Developmental reserve capacity specifically encompasses resources that may be activated or increased as a result of interventions or new age-related changes. Resilience has been conceptualized in the literature as both a trait and a process. When integrating definitions of resilience as a process, it may be suggested that plasticity incorporates resilience. "Translating life-span ideas into the language of resilience, we could define facilitators and their related gains as protective factors, and the limiters and their related losses as risk factors" (Staudinger et al., 1995, p. 809). These gains and losses can be discussed in terms of common challenges faced by older workers and resources or compensatory strategies that may be activated for critical adjustment and maintenance of successful functioning in the workplace.

CHALLENGES FACING OLDER WORKERS

As older workers continue to thrive in the workplace, a dynamic process of adaptation and change can result in meeting every day challenges. Age-related decline may be evident in many domains of cognitive functioning. A strong, positive relationship has been demonstrated between job performance and cognitive ability in the literature. Combined, these findings may suggest that older workers would demonstrate a decline in performance, although no support has been discovered linking age directly to decreased job performance (Salthouse & Maurer, 1996). Tacit knowledge or practical intelligence is one domain of cognition that has been found to remain stable into later life (Park, 1994). Cognitive pragmatics may be called the "natural" resilience as it serves as a potential gain or source of protection in presence of possible cognitive losses in fluid ability or mechanics of intelligence (Staudinger et al., 1995). These compensations in the cognitive

domain can be best described in the dispositional pattern of resilience resulting from plasticity, both cognitively and structurally in the brain, allowing older adults to maintain a particular level of performance in the workplace.

Park (1994) also hypothesizes that one reason that older adults do not demonstrate decreased job performance is the use of environmental supports to compensate for cognitive deficits. Some older adults may choose positions that require less fluid intelligence thus relying more on crystallized intelligence such as judgment and knowledge. Applications of work experience and expertise, such as upper level managerial executive's daily decision making or a physician relying on years of medical practice to assist patients with medical choices can be easily translated into the concept of wisdom. *Wisdom* is defined as "expert knowledge system in the fundamental pragmatics of life permitting excellent judgment and advice involving important and uncertain matters of life" (Staudinger et al., 1995, p. 812). In this example, resilience should be considered a trait as described in the Polk's dispositional pattern. Some of the same personality traits, such as openness to experience, have been linked to resilience, and have also been correlated to higher levels of wisdom-related performance, further strengthening the link of cognitive compensation to the dispositional pattern of resilience. Certain personality traits can also assist an individual with management of adverse conditions. Neuroticism and extraversion have been shown to have a predictive value on subjective well-being (Staudinger et al., 1995), whereas persons with higher levels of openness to experience are better able to adapt to change (Costa & McCrae, 1985). Optimism (Seligman, 1990) and self-efficacy (Bandura, 1986) along with future time perspective have also been associated with successful aging, thus demonstrating resilience by the older adult through its circular definition as a trait and/or a process.

In addition to cognitive changes, older adults face decline in sensory systems, pulmonary functioning, bone density, metabolism, cardiovascular ability, thermoregulation, immune functioning, musculoskeletal capacity, and skin elasticity (Grosch & Pransky, 2009). Changes in these systems may limit an older worker's ability to maximize performance caused by decreased stamina, strength, hearing, or vision as well as an increased susceptibility to muscle strains, fractures, or skin tears. Such changes may be important, or compensation may be possible with behavioral intervention or ergonomic design. The research literature at present does not support the concept of a universal decline in job performance as a function of age. Older workers may continue to perform well or may show changes depending on the particular demands of a specific job situation. The precision of the performance measures may be important, and the nature of individual change may be gradual if at all.

Changes in the nature of work demands may play a role here. Few jobs demand physical strength, and most jobs do not demand the full capabilities of the person to perform essential job functions. Age-related declines in physical and cognitive/perceptual abilities may be countered by changes in job design, work strategies, workstation design, and training/retraining (Kanfer, 2009), thus enveloping multiple patterns of resilience, including dispositional, relational, and situational. Concepts of cognitive reserve are included under the dispositional pattern of resilience, allowing the older worker to maintain the necessary cognitive abilities to perform essential job functions and alter work strategies as necessary. The relational pattern of resilience can be identified through increased collaboration with coworkers or increased reliance on peer support for training, alterations in work station design, or other support roles to maintain a particular level of performance. Finally, the situational pattern is clearly defined as the older worker needs to accept the need for these compensatory strategies as a coping mechanism. The adversity resulting from age-related declines is appraised to lead to either positive or negative outcomes.

Changes in knowledge, skills, and abilities (KSAs) as well as personality may influence work motivation and job performance. Another important determinant is *person-job* (*P-J*) *fit* that refers to correspondence of a person's KSAs and the job demands that influence motivation, time, and effort to a work role. "Developmental changes in the strength of achievement, affiliation, generative and other motives over the life course may alter allocations of time and effort to the job or reduce interest in work, depending on perceived opportunities for motive in the work role. Perceptions of poor P-J fit may reduce job self-efficacy and also reduce work motivation" (Kanfer, 2009, p. 215).

Kanfer (2009) also states that there are four broad areas themes for age-related changes: loss, gain, reorganization, and exchange. Age sensitive changes in different dimensions of intellectual development (i.e., loss or gain) may affect the fit between personal attributes and job demands. P-J misfit can lead to boredom and a sense of lack of challenge, which if not countered through a situational pattern of resilience by positive cognitive appraisal, can lead to reduction in performance.

WORK ENVIRONMENT

As per our definition, an older worker must encounter adversity, which may be derived from a variety of sources in order to demonstrate resilience. Workplace adversity should be viewed as any negative, stressful, traumatic, or difficult situation or period of hardship that is encountered in the occupational setting (Jackson et al., 2007). Any level of workplace adversity could threaten the P-J fit

leading to poorer job performance, decreased emotional or physical well-being, and lower levels of job satisfaction. Sources of workplace adversity include physical work environment, psychosocial work environment, job redesign, and injury or illness. Similar discussions have supported these issues under the term "work ability," which concerns how well an individual's capabilities, health, and well-being match job demands (McLoughlin et al., 2011). Older workers must display high levels of resilience in order to adapt to many changes and challenges faced on a regular basis in the current workplace. *Workplace adaptation* is defined by Yeatts, Folts, and Knapp (2000) as "the continuous and dynamic process by which an individual seeks to establish a complementary, reciprocal relationship, or 'fit' with his or her job" (p. 567).

Workplace Adversity

Workplace adversity from the physical work environment can be viewed from the limitations of the older worker, which have been discussed earlier in the chapter, such as age-related declines in sensory, cognitive, and physical abilities. The physical work environment may also include physical location, climate, work pace, job content, and current availability of work aids. The psychosocial work environment not only envelopes behaviors and attitudes of the managerial staff and coworkers toward the older worker, but also considers the perceptions of the older worker regarding feelings of worth in the workplace, opportunities for promotion and advancement, and relationships to managers and coworkers.

Many older workers began work in an era promoting individualized job responsibility and compartmentalization of job duties. However, many jobs are being redesigned and organized into teams, which are responsible for the entire process instead of assigning each individual with a single component. This broadening of responsibility may require an older worker to gain new KSAs in order to successfully perform the redesigned job tasks (Yeatts et al., 2000).

Injury, whether occupation or otherwise, is a salient concern for older workers. Even more so is the threat of illness such as heart attack or stroke. Older workers suffer from more serious injuries, take longer to recover, and are less likely to return to work than their younger counterparts (Thomas, Browning, & Greenwood, 1994). The number of injuries and illnesses to workers 55–64 years old and workers 65 years and older increased 3% and 13%, respectively from the previous year (USDOL, 2009). Although the rate of nonfatal injuries gradually declines with age and plateaus at the age of 65 years, the likelihood of a workplace injury being fatal increases with age (Grosch & Pransky, 2009; McLoughlin et al., 2011). Workers aged 65 years and older experienced the longest absences from work in 2008 with a median of 15 days versus youngest workers (ages 14–19 years) only requiring 4 days to recover from injury (USDOL, 2009).

Health care utilization and likelihood of disability increase with age, demonstrating the higher frailty of older workers with respect to health status (Grosch & Pransky, 2009). Mayer, Gatchel, and Evans (2001) reported that length of disability was significantly longer in older workers with chronic disabling spinal disorders (CSDS) than younger workers prior to rehabilitative procedures, which can be caused by degenerative changes in spinal column following years of repetitive stress. Older workers and employers must be cognizant and minimize a variety of potential sources of workplace adversity in order to maximize potential for continued success in the dynamic workplace.

Resilience in the Work Environment

"Resilience is not only a 'natural occurring' phenomenon but that resilience can be supported and enhanced by interventions and 'age-friendly' environments" (Staudinger et al., 1995, p. 801). Any one of the previously mentioned stressors can threaten the P-J fit and decrease the ability for an older worker to remain in the workforce. Resilience can be demonstrated a number of ways to overcome workplace adversity dependent on the presentation of the challenge or threat, including dispositional pattern, situational pattern, and relational pattern.

The dispositional pattern of resilience can be exhibited by the older worker through participation in vocational education, rehabilitation following injury or illness, as well as possessing personality traits that facilitate success under stress, which have been discussed earlier. Cognitive appraisal and coping strategies can be used to reflect the situational pattern of resilience with respect to initial response to workplace adversity and changes such as job redesign. An extremely crucial element of successful aging in the workplace is evident using the relational pattern of resilience. This includes relationships with managers and coworkers, support networks at home and work, and an older worker's ability to adjust to multigenerational workplace. These relationships are so important because an older worker may need to rely on support from managers and coworkers to aid in improving the P-J fit through establishment of the "age-friendly" environments mentioned by Staudinger and associates (1995).

First and foremost, the older worker ultimately carries the responsibility of overcoming workplace adversity. For example, consider the complex instance of job redesign wherein a previously independent older worker must now work with and rely on a team of inter-generational coworkers for his or her success. How the older worker views these changes is a crucial element toward the decision of regaining a satisfying P-J fit or potentially leaving the workforce for retirement (Yeatts et al., 2000). If the older worker finds this redesign as a welcome change or opportunity to acquire new skills, he or she will most likely seek out additional training to lessen the gap between his or her current KSAs and those

required by new job demands. However, if the older worker deems the job redesign as threatening or unacceptable, he may decide to continue the position in misery, leave the workplace for retirement, or seek new employment entirely. This type of cognitive appraisal typifies the situational pattern of resilience because a resilient older worker would most certainly welcome job redesign as an opportunity for improvement.

Another area in which the older worker is significantly responsible for the ultimate outcome is following injury or illness. Of course, there are circumstances that may be beyond the reach of the older worker, such as physician competence; however, ultimately this same type of cognitive appraisal has been found crucial to return to work (Alaszewski, Alaszewski, Potter, & Penhale, 2007; Mayer et al., 2001). Although it has been stated that older workers tend to take longer to recuperate following injury or illness than younger adults, Mayer and colleagues (2001) found no significant age-related differences in ability to participate in exercises required for rehabilitative program. Psychosocial issues have been linked to age-related differences in return to work rate (Alaszewski et al., 2007; Grosch & Pranksy, 2009; Mayer et al., 2001). In a study examining barriers in return to work following a stroke, Alaszewski et al. (2007) noted "the degree of residual disability did not appear to be the key factor in shaping their perceptions of work, rather the value and meaning of work were shaped by past experience and biography." The authors go on to say "individuals who had developed a strong sense of their own resilience, even their own indestructibility, tended to treat their stroke as another challenge" (p. 1865). This cognitive appraisal of challenge assists older workers to succeed at rehabilitation and facilitates successful return to gainful employment. Even individuals with residual speech or cognitive impairment following stroke cited perceived level of supportiveness in work environment as the indicator of whether or not they would be able to return to work. Psychosocial issues can also play a role in the older worker's decision to complete the rehabilitative process needed to facilitate a return to work. Some of these include whether there is a perceived fulfillment of work responsibilities allowing the worker to exit the workforce with pride, increased access to Social Security disability following an injury, which allows for financial support without continuing work, as well as the perception of less opportunities in the workplace for a chronically disabled older worker (Mayer et al., 2001). The psychosocial issue of perceived fulfillment of work responsibilities can be included in the philosophical pattern of resilience as the older worker attempts to reflect on goals, beliefs, and meaning of work.

Also included in the earlier example of job redesign is the notion of working with a multigenerational team. Not only must the older worker accepts the changes in job demands but also working closely with younger and middle-aged

workers can present a unique source of workplace adversity. According to Pitts-Catsouphes and Smyer (2007) from the Sloan Center on Aging and Work, one of the dimensions in which workers can be viewed is through the generational lens. Each cohort is not only similar in age but has also been exposed to significant historical events that may alter their views or values expressed in the workplace. Examples may include the technological savvy of the Millennials (born between 1981 and 1999) as they grew up with easy access to computers and the Internet or the baby boomers (born between 1946 and 1964) being exposed to significant loss and turmoil during the Vietnam war. Adversity may be encountered by (a) an individual misusing the generational lens and overgeneralizing certain characteristics of a "generation" to all members of the cohort instead of treating each employee as an individual or (b) different views, values, or work ethic causing conflict during work responsibilities requiring team interaction and collaboration. The relational pattern of resilience is easily applied here as the older worker must count on positive peer interactions and support to maintain a successful work environment.

Developing and nurturing relationships in the workplace needs to be initiated by the resilient older worker exhibiting the relational pattern of resilience; however, in this dyadic relationship, both parties must be amiable for success to occur. So, it should be noted that managers and/or coworkers need to be involved in maintenance of a successful psychosocial work environment. The next section will discuss ways an employer may assist the older worker in adjusting to adversity in order to maintain successful performance in the workplace.

Employers Promoting Worker Resilience

Negative attitudes held by older adults and their employers may contribute to lack of access to training and retraining. Older workers may be reluctant to volunteer for, or pursue, training and retraining opportunities. This reluctance may be caused by feelings of inadequacy about being able to do well in a training program, fear of failure, fear of competition with younger individuals, or the expectation that supervisors would encourage them if they felt it was appropriate. Supervisors, on the other hand, expect that older workers would volunteer if interested and interpret lack of volunteering as lack of interest or motivation. Retraining, formal education, and self-directed learning are necessary so that older workers can build on previous experience and prior knowledge. Well-designed training program can ensure success in these endeavors (Rothwell et al., 2008).

Perceptions of older adults in the workplace assist in shaping the attitudes of managers and coworkers and have received a great deal of attention in the literature revealing mixed reviews. It has been found that some human resource

managers believe that older workers have a different work style that will clash with that of younger workers. Older workers usually have higher salary costs and benefits. On the other hand, older workers are perceived to be more skilled at interpersonal communication and customer relations than younger workers and are generally seen as excellent workers (Rothwell et al., 2008). The Sloan Center on Aging and Work at Boston College completed two studies investigating the multigenerational workplace (James, Swanberg, & McKechnie, 2007; Pitts-Catsouphes and Smyer, 2007). The first by James and associates (2007) examined perceptions of five different age groups regarding capabilities of older workers (good mentors, adaptability, eagerness for training, flexibility) and opportunities available to them for advancement in the workplace. In general, perceptions of older workers' capabilities became more negative with successively younger generations. However, most generations agreed that older workers are respected in the workplace and are interested in being promoted. The younger generations felt older workers are more likely to be promoted.

As briefly discussed earlier, Pitts-Catsouphes and Smyer (2007) explored different ways that age can be viewed in the workplace by both the worker and the employer. In addition to the generational lens already mentioned, there is also chronological age, life stage, and career stage. Each of these perspectives on age may lead to different approaches by the managerial team to engage and satisfy the employee. One can imagine that if the manager and older worker used a different perspective, poor communication and understanding could result. In general, the previously mentioned perceptions and attitudes toward the older worker can result in heightened stress levels, hostility, and adverse psychosocial work environment. Staudinger et al. (1995, p. 822) argue that contrary to these stereotypes, "older adults possess a substantial capacity of adjustment and flexible mastery of demands" suggesting that the older worker must not internalize these misconceptions about themselves and strive for success in the workplace. However, it is also the responsibility of the managerial staff and other coworkers to be sensitive of the multigenerational stressors present in the workplace in order to support and complement the resilience exhibited by the older worker.

There are other things that an employer can do to establish the "age-friendly" environment. Regarding rehabilitation and return to work following injury, it has been found that older workers have less access to rehabilitative services and employers less likely to encourage older workers to seek these services (Grosch & Pransky, 2009). As noted earlier, perceived supportiveness in work environment is a strong facilitator in return to work following stroke (Alaszewski et al., 2007) suggesting that employers have some responsibility in supporting an older workers' decision to return to the workplace. Employers should not wait until injury

or illness to demonstrate this supportiveness because there are several preemptive strategies that may be used to ensure a supportive environment.

Ergonomic design or human factor considerations should provide the worker with an optimal P-J fit with respect to workplace design. This is more salient with the older worker because of age-related declines in sensory, physical, and/or cognitive abilities forcing these workers to expend a greater percentage of physical capacity and reserves in performing routine work tasks (Hansson, Robson, & Limas, 2001). It may be necessary for an employer to make modifications to an environment to either promote return to work following injury or even to allow an older worker to maintain a satisfactory level of performance on a daily basis. Some of these modifications may include accommodations for the sensory systems, cognitive abilities, and physical capacity. With respect to sensory systems, simple changes in levels of illumination to improve visibility and reduce glare can assist older workers in task performance. Increasing print size, enhancing contrast, and providing multimodal signals (e.g., visual and auditory emergency alarms) can also enhance the work environment for older adults (Grosch & Pransky, 2009; Hansson et al., 2001). Reducing the amount of information that needs processed into smaller tasks, allowing worker to self-pace tasks, and providing breaks can compensate for reduced ability in some cognitive domains (Grosch & Pransky; Hansson et al.). Allowing a worker to sit at a workstation instead of stand can significantly reduce repetitive physical stress loads as can modifications of environment to eliminate the need for bending, kneeling, or maintenance of awkward postures through the use of mechanical aids (Grosch & Pransky).

Finally, an employer can offer flexibility in the workplace to allow workers a sense of control over environment, which will lead to increased resilience and enhance job satisfaction as well as delayed retirement (Rix, 2011a). The Sloan Center on Aging and Work defines workplace flexibility as "employees and their supervisors having some choice and control over when, where, how work gets done, and what work tasks are assumed by which employees/work teams" (Pitts-Catsouphes, Matz-Costa, & Besen, 2009, p. 4). Flexible work options can be classified into five categories: flexibility in number of hours worked, flexible schedules, flexible place, options for time off, and other options. Included in "other options" are examples such as transfer to job tasks with reduction in responsibility and pay, as well as control over break times as mentioned earlier as strategies to compensate for potential age-related cognitive changes.

It is evident that the older worker has numerous opportunities to demonstrate resilience in the workplace. Adversity is a prominent fixture in the workplace, forcing the older worker to step up for the challenge or wither away into obsolescence. It is the responsibility of the older worker to activate the resources

necessary to overcome this adversity. These resources may include internal (personality traits, knowledge or emotional intelligence) or external resources (support from managerial staff, coworkers, or family). The older worker will use these resources to adjust to workplace adversity, maintain equilibrium, retain some sense of control over his or her environment, and continue to successfully perform work duties.

FULL-TIME WORK, PART-TIME WORK, AND/OR RETIREMENT

The question is often asked why someone wants to work longer when in fact they have the resources to retire. In the past, much of the emphasis has been placed on work as giving a sense of identity. Retirement was seen as the roleless role, and people may feel devalued if they are not actively working. This view of later life has been prominent theme in much discussion of work and retirement (Rothwell et al., 2008).

New conceptions of the work life have led to a reequilibration of the work span. Laura Carstensen (2009) suggests that entry into full-time work be delayed with the prime working years would both start and end later. In her model, people in their 50s and 60s would still be in midcareer rather than on the cusp of retirement. Even if we can change the current work life for present generations, we can still modify how we look at the later part of the life span and make creative changes.

A number of authors have suggested that we turn the 60s and 70s into a more creative and satisfying later life period. Just as this discussion was beginning, the economic downturn of the late 2000s placed individuals into a difficult position. Loss of pension, wealth, and uncertainties caused by layoffs and downsizing, as well as difficulty in finding reemployment changed the atmosphere for such considerations.

One form of resilience is the ability to negotiate new options and approaches. Another representation of resilience is the maintaining of professional competence through continued lifelong learning. The need to train and retrain and update skills continues to be a major challenge. The willingness to carry out updating has been a major issue as discussed by Rothwell et al. (2008). Another form of resilience is the willingness of mature individuals to seek employment and not become discouraged workers.

Definition of Retirement: Early Retirement, Phased Retirement, Bridge Employment

Part of the discussion of resilience and work is the person's ability to deal with either a voluntary or involuntary decision to leave a present employment situation

and retire. Offers of an early buyout with the fear of job loss in the near future or a sudden announcement of a layoff require immediate action and decision making. The opportunity to plan for leaving a particular job may make it more of a voluntary situation.

Retirement is often defined as a withdrawal from one's position or occupation, which usually means giving up work. However, retirement is still evolving today as evidenced by changing transition patterns and ages of labor force exits. Retirement is not necessarily a complete withdrawal from the work force and work activities. An estimated 20%–30% of retirees reenter the workforce, although the likelihood of reentry decreases with age. Postcareer bridge employment may involve changes in industry, occupation, hours, or salary. These multiple pathways from work to retirement highlight the importance of viewing retirement as a process and the need to study this process over time. A crisp retirement transition is a single, unreversed, and clear-cut exit from the labor force. A blurred retirement transition is a gradual role transition marked by repeated reentries and exits and may encompass months or years.

Crisp and blurred transitions are found to differ by age, financial resources, and health status. Individuals with poor health were more apt to demonstrate blurred transitions. Individuals with the poorest health were more likely to demonstrate a crisp exit pattern. It is clear that examining exit patterns is very important in understanding the retirement process. Considering retirement as a single transition does not adequately capture the complexity and the dynamic nature of the retirement process. The changing nature of retirement is also evident in the changes in retirement age based on preference, policy change, and changing late-life work patterns.

Three retirement definitions found in the literature are self-attributions of work/retirement status, receipt of Social Security or pension income, and the number of hours worked per week for pay. Under current Social Security rules, people can work full time and receive the benefit. This is another demonstration of the dynamic and elusive nature of a definition of retirement.

RETIREMENT PROCESS

Older workers must take personal responsibility for decision making, often discussed as self-management of work and retirement (Rothwell et al., 2008). (For an in-depth review of career self-management and the protean career, the reader is referred to Chapter 6 in Rothwell and associate's Working Longer.) Retirement is a process rather than a single event. The phases that have been identified as a normative experience include: *preretirement*, *the decision to retire*, and *postretirement adjustment*. The initial stage, preretirement, deals with three major areas of

concern: social, financial, and time management. Essentially, workers begin the contemplation of retirement and anticipatory socialization. Studies indicate that this stage can begin as early as 15 years before actual retirement. During this phase, workers typically begin discussing retirement with loved ones, peers, and coworkers; engaging in retirement-oriented activities; and financially preparing for the life change. The ability to deal with these issues represents resilience. Preparation is the most important aspect because it shapes the individuals perspective of retirement, morale, and level of nostalgia. Specifically, research notes that workers who plan for retirement cope more successfully with the retirement transition in comparison to workers who do not plan; and, in fact, most people develop no systematic plan for retirement at all.

The decision to retire, the second phase, addresses two major concerns: when and how a worker will retire. The timing of retirement is a direct result of whether or not retirement is voluntary or involuntary. If the decision is voluntary, as is likely that for many workers, the decision is considered over several years taking many elements into account such as health, finances, attitudes toward retirement, and family obligations. On the other hand, workers can be faced with involuntary retirement, a result from employment constraints rather than a preference for leisure. Such constraints may include mandatory retirement policies, organizational restructuring, ill health of the worker or a loved one, and pressure from the employer. Additionally, an older worker may be forced to choose retirement because of the few choices he or she may have once reentering the job market following injury or layoff. Many discouraged older workers will settle for involuntary retirement instead of transitioning into an undesirable work environment, whereas others are simply unable to find work. Overall, the decision to retire may or may not rest in the hands of the individual, but he or she does have control over how he or she prepare for the transition. Planning for retirement is essential to adjustment, and with planning, comes a much smoother transition. Thus, in exploring *when to retire* and *how to retire*, the individual will have a greater understanding of his or her needs and whether or not he or she is prepared for the transition.

Finally, retirees enter a period of postretirement adjustment, a continuous process that begins once a worker has determined when and how he or she will retire. The worker begins to discuss specific plans with others and to enter a stage where he or she experiment with and explore leisure activities. Individual differences exist in terms of available resources and also in what activities a retiree may find satisfying. Additional factors that affect a retiree's adjustment include preparation, socioeconomic status, health, marital status, and social support.

Using the role theory and resilience framework, Greenfield and Marks (2004) identified that volunteering may serve as a protective factor in older adults with a greater number of role-identity absences, which can occur because

of transitions from the workforce, changes in caregiver roles (loss of parent or launch of children from household), loss of spouse, or transition into a new community. The philosophical pattern of resilience is best exhibited here as the older adult attempts to maintain sense of purpose in life. A study by Tang, Choi, and Morrow-Howell (2010) lends support for the use of Carstensen's socioemotional selectivity theory to explain benefits of volunteering. Older adults devote time to socially and emotionally meaningful activities, such as volunteering to improve mental health (Greenfield & Marks, 2004; Tang et al., 2010). Both the philosophical and relational patterns of resilience are demonstrated through this conceptualization of volunteerism. Older adults are fulfilling a meaningful life while engaging in activities to develop a strong social support network.

A plethora of literature demonstrates that older adults who engage in healthy and active aging practices maintain better overall health, physical, and psychological well-being, and reduce health care expenditures. Older adults possess a reserve capacity that allows for gains to be made in addition to losses that occur with normal aging (Staudinger et al., 1995). This reserve capacity can be activated and maximized with appropriate opportunities and under the right conditions including transition from the workplace. Lifelong learning is congruent with the concept of resilience in that older learners are using educational opportunities to adjust to adversity in order to maintain positive well-being and continue to move forward despite challenges.

FUTURE RESEARCH, PRACTICE AND POLICY

According to several sources including both AARP and the Sloan Center for Aging & Work, one of the greatest policy issues for the older adults is the rising length of unemployment. Older job seekers have a more difficult time than younger job seekers in returning to the workforce following a job loss (Heidcamp, Corre, & Van Horn, 2010; Rix, 2011b). *Long-term unemployment*, defined by unemployment greater than 27 weeks, is also greater in older adults at approximately 6 out of 10 versus the average population of 4 out of 10 (Heidcamp et al. 2010; Rix, 2011b). Heidcamp and associates (2010) cite differences in job search technique as a prominent difference in efficiency during the job hunt. Younger job seekers use social networking and former employers to remain connected, whereas older job seekers rely heavily on newspaper classified ads and general company job boards.

Another area potentially responsible for this discrepancy between younger and older adults is vocational retraining (Heidcamp et al., 2010). Not only are younger job seekers more apt to seek out job retraining, but also publicly funded training programs may be reluctant to offer services to older adults because of

fear that their participation may negatively affect federally mandated performance measures. Only one federal program is specifically tailored to the older job seeker such as the Senior Community Service Employment Program (SCSEP), therefore many displaced older workers may not have the necessary skills to compete in the dynamic workforce (Rix, 2011a). The resilient older worker would find ways to take advantage of retraining programs, as well as stay up to date on the most efficient methods of job hunting to maximize opportunities during an unemployment period. If the individual was uncertain of the best path, he or she would seek out assistance from a social support network demonstrating the relational pattern of resilience.

To best enhance their resilience, unemployed older adults need access to assistance with job searches, vocational retraining, and financial assistance including health care during their unemployment period. These older adults are being forced to use retirement funds, savings accounts, and credit card debt to survive in this turbulent economy. The older adult also must "hope that employers will assess their hiring and retention policies to welcome and accommodate this growing segment of the workforce" (Heidcamp et al., 2010, p. 20).

This notion of changing policy within the employer fits well with a brief written by Brown, Wong, and McNamara (2009). These authors found that one of the top threats to unsuccessful fulfillment of a mission statement in both the public and private sector was "an inability to recruit and retain the staff needed p. 5" and also recognized opportunities "to ensure they had the talented workforce needed to meet their objectives p. 6" such as transfer of knowledge and leadership training. As discussed previously, the employer may use many strategies to retain or attract older workers including flexible scheduling. The employer should also include the older worker in training and retraining efforts to ensure professional competency and updating of needed skills.

SUMMARY

Although resilience has numerous conceptualizations, Polk's (1997) four patterns of resilience best typify successful adaptation to workplace adversity for the older worker. All four patterns (dispositional, relational, situational, and philosophical) have been identified as key components to an older worker's maintenance of physical and psychological well-being in later work life. The *dispositional pattern of resilience* is portrayed through the older workers' implicit and explicit compensatory strategies for decline in some cognitive domains. Wisdom and expertise along with many of the personality traits possessed by the older worker enabling success in a challenging workplace also typify the dispositional pattern of resilience. Moving to the *relational pattern of resilience*, the older worker must develop

and nurture relationships with managers, coworkers, and even family members, which compose one's social support network in times of adversity. Older workers must also adjust to the multigenerational workplace requiring demonstration of the relational pattern of resilience. Lifelong learning and volunteerism needed to be included in the relational pattern of resilience because they are both excellent platforms for older adults to maintain social activity and develop new social networks.

Cognitive appraisal skills and coping strategies are a salient portion of the *situational pattern of resilience* and may be exhibited daily in the life of an older worker. These skills include one's initial reaction to workplace adversity and whether to accept changes as opportunities for growth or threats of obsolescence. Some of these changes may emerge in the form of injury or illness as well as job design or layoffs. Finally, the *philosophical pattern of resilience* emerges when the older worker reflects on the purpose of life or fulfillment of goals and responsibilities. This occurs when the older worker must decide whether to return following injury or illness. Volunteerism is also included in the philosophical pattern of resilience because an older adult may use volunteering as a mechanism of filling a role absence vacated by retirement or some other role identity loss.

In summary, older adults regularly face adversity through normal aging, injury/illness, role changes, and a dynamic workplace. Some older adults thrive in the face of these challenges caused by demonstration of many characteristics that encompass resilience. These older adults continue to be successful despite many challenges caused by their ability to activate resources necessary to maintain productivity, independent functioning, and positive levels of well-being.

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CHAPTER 12

Resilience and Family Caregiving

David W. Coon

ABSTRACT

Family caregiving for people with dementia and grandparents raising grandchildren both remain critical issues for our increasingly diverse and aging society. Very little research has focused on the role of resilience in either of these caregiving literatures, thereby creating opportunities for researchers, practitioners, and policy makers to drive future agendas including the development, evaluation, and dissemination of caregiver interventions grounded in resilience frameworks. This chapter reviews key issues related to caregiver resilience and makes several recommendations to help move its study and application forward, including the use of mixed-methods and prospective longitudinal designs, the application and evaluation of relevant theoretical frameworks, and the examination of interventions at different levels that target both mental and physical health outcomes with diverse populations.

INTRODUCTION

Family caregivers are the backbone of long-term care, with over 45 million Americans providing an average of 21 hours per week of unpaid care to impaired older adults (National Alliance for Caregiving [NAC] & AARP, 2009). However, family caregiving for older adults, particularly older adults with Alzheimer's disease or a related disorder (ADRD), comes with other price tags, including well-documented negative physical, emotional, and social outcomes ranging from depression and poor health to social isolation and increased risk of mortality

(e.g., Coon, Ory, & Schulz, 2003; Sörensen & Conwell, 2011). To date, the vast majority of research on caregiving for older adults focuses on the negative outcomes associated with the caregiving role; as a result, a growing body of research in the last two decades has focused on the development, implementation, and evaluation of interventions to address these negative outcomes (Coon, Keaveny, Valverde, Dadvar, & Gallagher-Thompson, in press; Gallagher-Thompson & Coon, 2007).

Similarly, grandparent caregivers experience many negative physical and mental health consequences including personal (e.g., poor physical health, insomnia, depression, role overload), interpersonal (poor relations with adult children, struggles with parenting, social isolation, marital strife), and economic consequences. These negative outcomes are above and beyond those experienced by their noncaregiving grandparent peers (Hayslip & Kaminski, 2005; Goodman, Scorzo, Ernandes, & Alvarez-Nuñez, in press; Musil et al., 2010). The impact on grandparents continues to grow with the number of children younger than 18 years living with grandparents increasing from 8% in 2001 to 10% in 2010 totaling almost 7.5 million children living with their grandparents in 2010. Twenty-two percent of those children were living without one of their parents in the household (U.S. Bureau of the Census, 2010).

What Makes Caregiving Stressful?

For caregivers to impaired older adults, the stress often multiplies with cumulative disease progression, unpredictable care recipient moods and behaviors (particularly with ADRD patients), diminished social support and constriction of social outlets, and a lack of preparedness to meet demands (Coon et al., in press; Coon et al., 2003; Mausbach et al., 2007). For grandparents, their caregiver stress is often associated with their adult child including feelings of disappointment and resentment in addition to the various care demands of raising a grandchild, especially if that grandchild has developmental, emotional, or behavioral difficulties (Hayslip & Kaminski, 2005; Hayslip & Shore, 2000). Many grandparent caregivers take on the caregiving role while they are grieving the loss (e.g., death or incarceration of an adult child or child-in-law) that put them in the role. Typically, these stressors are magnified as they also deal with the grief or loss expressed by their grandchildren (Hayslip & Kaminski).

Researchers, practice professionals, administrators, and family caregivers themselves sometimes forget that caregiving occurs in a context. Caregivers' lives are often filled with other roles such as worker, spouse, parent, and/or volunteer; and, the new role of caregiver may be viewed as out of place in the life cycle (e.g., a grandparent raising children). They may be already overloaded with other stressors like foreclosure and unemployment, and struggling with their

own vulnerabilities (e.g., history of chronic physical or mental illness, domestic violence, or substance use). Family caregivers can also experience barriers to social support or service availability, accessibility, or acceptability that could help them adapt to caregiving demands. Moreover, the context of care typically spans a combination of these and other factors; as a result, family caregivers may wake up with a sense of helplessness, believing that they do not have what it takes to meet the next caregiving challenge.

Still, the majority of caregivers whether caring for older adults or raising grandchildren readily endorse caregiving gains or positive aspects of caregiving. Examples of positive aspects of caregiving include having the opportunity to serve as a role model, having the chance to give back to care recipients and to keep care recipients and grandchildren safe and as healthy as possible, experiencing an enhanced sense of purpose or meaning, feeling appreciated, and helping to maintain the identity and well-being of the family (Coon et al., 2004; Goodman et al., in press; Haley et al., 2004; Hayslip & Kaminski, 2005; Hayslip & Shore, 2000; Tarlow et al., 2004). The arena of positive aspects of caregiving remains relatively untapped in terms of research and intervention development, especially as it relates to caregiver resilience.

RESILIENCE IN THE CONTEXT OF CAREGIVING

Resilience has been defined and explored in a variety of ways in the scientific and practice literatures (e.g., Masten, 2001; Rutter, 1987; Zautra, Arewasikporn, & Davis, 2010), including the literature focusing on family caregiving for older adults and grandparents raising grandchildren (e.g., Garity, 1997; Gaugler, Kane & Newcomer, 2007; Goodman et al., in press; Musil et al., 2010; Wilks & Croom, 2008). *Resilience* can be defined as adapting successfully or positively in the face of a stressful experience. Resilience in caregiving situations can be viewed as encompassing processes similar to resilience in other stressful experiences, especially when one considers that the stress of caregiving emerges within the broader sociocultural context of caregivers' and care recipients' lives. Within the context of informal care, caregivers often hold multiple roles, express their own personal vulnerabilities, and face other real world stressors (e.g., job loss and foreclosures, stressful work environments, or barriers to services). Moreover, the sociocultural context of care extends beyond the caregiver to other people and their environment, ranging from care recipients and family members to work settings and neighborhoods.

Resilient caregivers, within their sociocultural contexts, adapt successfully to the caregiving role, its demands, responsibilities, and accompanying vicissitudes. For example, in problem solving to meet care demands, a resilient busy

business executive may alternate on-site team meetings with telecommuting and adjust work travel to care for a memory-impaired grandmother. A resilient aging groundskeeper may find a way to take early retirement, recareer, or identify formal supports to facilitate parenting responsibilities for an autistic grandchild. Drawing from work in developmental psychology, these caregivers can be viewed as overcoming the odds, adapting to adversity, and recovering from stressful situations through positive adaptation to stressful life events and/or chronic stressors (Masten, 2001; Rutter, 1987). Resilient caregivers maintain and continue forward when facing a chronically stressful situation and/or regain some sense of physical, emotional, and social/leisure well-being in the face of an acute stressor.

The caregiving literature related to resilience broadens further when one considers the protective factors or positive correlates (Rutter, 1987) that augment resilience by either directly influencing health and emotional well-being and/or buffering the negative impacts of stressful situations on resilience (Wilks & Croom, 2008). These protective factors include a variety of domains studied in family caregiving and encompass personal characteristics (e.g., psychological resources) as well as external or environmental conditions (e.g., social resources) that foster adaptation. Moreover, caregivers' personal characteristics interact with the environmental conditions in which caregivers live, work, provide care, and reach out for formal and informal caregiver support. Although personal vulnerabilities and environmental stressors can exacerbate these person and environment interactions, protective factors can help to assuage stressors or even enhance caregiving situations. The diversity of caregivers and their caregiving situations in our society suggests an array of intervention approaches across the caregiving trajectory is needed, including interventions that help foster caregiver resilience. Protective factors can play critical roles in resilience based interventions and can span a varied list from caregiver self-efficacy, self-esteem, positive or adaptive coping, and positive aspects of caregiving to pleasant activities, spirituality or religiosity, and formal and informal support. The consideration of protective factors will help researchers and practitioners move away from a sole focus on stress and caregiver deficits to a consideration of caregiver strengths.

FAMILY CAREGIVING FOR LOVED ONES WITH DEMENTIA: STATE OF THE SCIENCE

Resilience and Protective Factors

To date, very little work has focused on resilience and its protective factors and other correlates, and only a handful of studies have used existing or developed new measures of resilience to advance the field. Applying stress and coping theory, Garity (1997) measured and found resilience among family caregivers of

ADRD patients to be related to coping style. More specifically, resilience was positively associated with problem-focused coping style (particularly, planful problem solving) and the use of distancing through not letting situations get to them and looking on the bright side. In contrast, resilience was negatively related to escape-avoidance coping such as wishful thinking and increases in sleeping, smoking, drinking, eating, or self medication.

Wilks and Croom (2008) also specifically measured resilience in their study of ADRD caregivers in which the protective factors of family, friend, and overall social support positively affected caregiver resilience and moderated the impact of perceived stress. Their results showed that the higher the level of social support, the less that stress negatively impacted resilience. Moreover, the Wilks and Croom study revealed that caregivers can simultaneously report both moderate levels of perceived stress and moderately high levels of resilience.

In a 1-year study among Canadian community dwelling caregivers of the older adults (Chappell & Dujela, 2008), resilience was the only significant predictor at baseline of caregiver burden, life satisfaction, and perceived stress with higher levels of resilience being associated with lower levels of caregiving burden and perceived stress and greater life satisfaction. Although these findings did not hold up across time and the study did not focus solely on ADRD caregivers, the results still underscore the need to incorporate and investigate measures of resilience. As in the Wilks and Croom (2008) study, caregivers appeared to experience both positive and negative outcomes (high levels of burden and high levels of life satisfaction), which has implications for future research and intervention development.

In terms of caregiving transitions, Gaugler and his colleagues (2007) did not use an existing measure of resilience in their 3-year study of adaptation among dementia caregivers. Instead, they classified caregivers at baseline into two categories of resilience based on care demands and burden: caregivers reporting high care demands and low burden (high resilience) and those with low care demands and high burden (low resilience). They found high resilience was associated with variety of factors including context of care (e.g., being female, caring for a longer time span, lower income, and living apart from the care recipient), care demands (e.g., spending more time providing care and higher cognitive functioning in the care recipient), and resources used (e.g., more use of in-home help, overnight hospital services, and informal support from other family and friends). Of particular interest in terms of transitions, low resilience at baseline was associated with more likelihood of care recipient institutionalization over time, indicating that resilience plays a part in helping caregivers sustain their in-home caregiving role. In other work on caregiver transitions by Resources for Enhancing Alzheimer's Caregiver Health (REACH) investigators (Schulz et al., 2003); ADRD family

caregivers of both in-home and institutionalized care recipients endorsed high levels of depressive symptoms prior to their loved ones death. Demonstrating remarkable resilience and recovery, caregivers on average reported significant declines in depressive symptoms within 3 months; and within 1 year, these symptoms dropped below those reported during their caregiving role. Only a minority of caregivers reported needing or using bereavement related services (Schulz et al.). The results of these studies of caregiver transitions point to the need to develop and test screening/assessment tools to help target less resilient caregivers and tailor interventions at appropriate points in the caregiving trajectory to meet the differing needs of low- and high-resilience caregivers.

Additional research in ADRD caregiving, although not examining resilience directly, does investigate the relationship among negative caregiver outcomes (e.g., depressive symptoms, perceived stress, burden) and protective factors or psychosocial resources associated with resilience such as personal mastery (e.g., self-efficacy, coping) and social resources (e.g., receipt and satisfaction of social support). For example, in a 5-year study of in-home spousal caregivers of dementia patients, longitudinal analyses of personal mastery, caregiver stress, depressive symptoms, and caregiver health revealed that mastery appeared to reduce the impact of stress on depressive symptoms and caregiver health over time (Mausbach et al., 2007). This study and other research discussed in a recent review of resilience factors and the psychobiology of dementia caregiving (Harmell, Chattillion, Roepke & Mausbach, 2011) are indicative of an important shift in the literature. This shift is driven by research investigating the relationships among resilience related protective factors and physical health risks. More specifically, coping, self-efficacy, and personal mastery appear to have either direct or interactive effects on physical health outcomes, with a growing number of dementia caregiver studies demonstrating that these protective factors have potentially broad and beneficial effects on both biomarkers and clinical markers of disease. Harmell and her coauthors (2011) suggest that future research with dementia caregivers should examine other protective factors and their relationship to physical health outcomes from social support and pleasant activity engagement to optimism and positive aspects of caregiving. Such investigations lay a solid foundation for future resilience research and provide insight for practitioners and program developers assisting these caregiving families.

Positive Aspects of Caregiving Among Dementia Caregivers

The study of positive aspects of caregiving, caregiver gain, and caregiving uplifts remains very limited when compared to the caregiving literature as a whole (e.g., Coon et al., 2004; Haley et al., 2004; Tarlow et al., 2004). This is especially true when one considers research that specifically examines its relationship to

caregiver resilience. The 9-item Positive Aspects of Caregiving scale (PAC scale; Tarlow et al.), in particular, could be conceptualized in terms of caregiver growth wherein caregivers are obtaining new insights including a better understanding of their enhanced capacities to adapt. For example, the PAC scale asks respondents if providing help has enabled them to appreciate life more, made them feel strong and confident, strengthened their relationships with others, and made them feel more useful. Several publications by the REACH investigators have used this scale to examine ethnic/racial differences in positive aspects of caregiving, finding that Hispanics (Coon et al.) and African Americans (Haley et al.) report greater benefits of caregiving than Whites. Roff and her colleagues (2004) extended these findings with African American and White caregivers demonstrating that African American caregivers' higher scores on the PAC scale were associated with higher levels of religiosity and lower socioeconomic status, lower levels of anxiety, and less bother associated with the care recipient's behavior problems. These findings are in line with other research in underrepresented ethnic/racial informal caregivers of older adults (e.g., Janevic & Connell, 2001).

In another REACH study with Hispanic and non-Hispanic women caring for loved ones with dementia, positive aspects of caregiving played an important role in the institutionalization of care recipients (Mausbach et al., 2004). Overall, Hispanic women delayed institutionalization longer than their non-Hispanic counterparts did. However, further analysis uncovered that Hispanics who reported fewer positive aspects of caregiving were more likely to place their loved ones than those who endorsed more positive aspects. Furthermore, less acculturated Hispanic caregivers when compared to more acculturated Hispanic caregivers were significantly more likely to identify benefits of caregiving. Cultural values related to *familismo* (the value of placing family over the individual) may help drive these and other caregiver decision-making processes (Coon et al., 2004; Mausbach et al., 2004). Hilgeman, Allen, DeCoster, and Burgio (2007) in their study of African American and White dementia caregivers investigated the role of positive aspects of caregiving as a moderator of treatment. In this study, caregivers reporting fewer positive aspects of caregiving benefitted the most from intervention across time. Much less work has been conducted with other ethnic/racial or cultural groups; and therefore, the study of positive aspects of caregiving, its relationship to resilience, and its role in caregiver intervention research with different cultural groups is warranted.

Interventions for Dementia Caregivers

Recent scientific reviews of psychosocial interventions to alleviate distress among caregivers of impaired older adults (Coon et al., in press; Gallagher-Thompson & Coon, 2007; Sörensen & Conwell, 2011) identify three overarching types of

empirically based treatments to alleviate caregiver distress in this population, most of which focus on caregiving for older adults with ADRD: psychoeducational skill-based training, psychotherapy/counseling (that is primarily cognitive behavioral in approach), and multicomponent (that tends to combine a skills based approach with another intervention approach such as a support group). Patterned after decades of research and practice focusing on negative psychosocial outcomes, the majority of these interventions emphasize reduction in outcomes like burden and stress appraisal as well as depression, anger, anxiety, and other negative mood states. Yet, several of these empirically based treatments have targeted protective factors as well, including positive mood states and well-being, competence and self-efficacy for caregiving, positive coping, and positive social interactions (Coon et al., in press; Gallagher-Thompson & Coon, 2007). Successful outcomes in these intervention studies appear to be related to interventions with active participation and behavior management skills building (Sörensen & Conwell). These successes include reductions in negative affect and improvements in positive mood states as well as increases in the protective factors associated with caregiver resilience. Given that many of the protective factors impacted by these treatments have been associated with physical health outcomes, a critical next step in dementia caregiver intervention research would involve the effective integration of psychosocial clinical trials with the study of resilience and protective factors and their impact on physical health outcomes. This intervention research needs to move beyond simple self-report measures to biomarkers and clinical markers of disease (Harmell et al., 2011). Moreover, the vast majority of caregiver interventions to date have focused on the individual or interpersonal levels, leaving interventions at the system, organizational, community levels or interventions that cross multiple levels relatively unexplored (Coon et al., 2003; Emmons, 2001).

GRANDPARENTS CARING FOR GRANDCHILDREN: STATE OF THE SCIENCE

Resilience and Protective Factors

Very little research focuses on the role of resilience, protective factors, and their correlates in the research literature on grandparents raising their grandchildren. Goodman and her colleagues (in press) conducted a unique pilot study of 50 grandmothers that had been involved in raising a grandchild 10 years earlier. Resilience and satisfaction with raising the grandchild were significant predictors of life satisfaction and mental health after the grandchild was raised. A closer relationship between grandmother and grandchild was also significantly related to better mental health and lower levels of depressive symptoms. In terms of

social resources, grandmothers with greater amounts of familial and friend sub-jective support reported higher levels of life satisfaction, and those with greater amounts of instrumental support reported fewer depressive symptoms.

Musil and her colleagues (e.g., Musil, Warner, Zauszniewski, Jeanblanc, & Kercher, 2006; Musil, Warner, Zauszniewski, Wykle, & Standing, 2009; Musil et al., 2010) have used McCubbin's resiliency model of family stress, adjustment, and adaptation (McCubbin, Thompson, & McCubbin, 1996) to help identify several correlates of grandmother caregiver resilience by exploring resourceful-ness, social support, caregiving role reward, and their impact on family func-tioning. Learned resourcefulness within their framework is comprised of two dimensions: self-regulatory efficacy and self-control. In their study, higher lev-els of learned resourcefulness were associated with higher family functioning. Similarly, more instrumental social support was associated with better family functioning, although being a custodial grandparent in the study was related to less instrumental support. Musil et al. (2010) extended this earlier work by studying grandmothers over a 24-month period in terms of their changing care-giving roles (raising a grandchild, living in a multigenerational household, or not caring for grandchildren). Moving from lower to higher levels of caregiving was related to increasing stress, worsening family functioning, increasing strain within the family, and deteriorating physical health. However, learned resource-fulness among grandmothers did not differ based on their caregiving status.

Social support as a protective factor also appears to play an important role in terms of depressive symptoms experienced by grandparent caregivers (Goodman et al., in press; Musil & Ahmad, 2002; Musil et al., 2009). Several studies have found social support to be associated with fewer depressive symptoms and other key outcomes including better health and mental health, greater life satisfaction, greater satisfaction with the caregiving role, and less difficulty with grandchil-dren (Goodman et al., in press; Hayslip & Kaminski, 2005; Hayslip, Temple, Shore & Henderson, 2006; Musil & Ahmad, 2002; Musil et al., 2009; Smith & Hancock, 2010). Likewise, active coping styles (e.g., making and taking plans of action) in contrast to avoidant coping styles (e.g., wishful thinking or not deal-ing with the situation) are associated with fewer depressive symptoms (Musil & Ahmad). Finally, parenting style may serve as yet another protective factor for family caregivers wherein higher levels of functional parenting has been shown to mediate the relationship between psychological distress and caregiver adjust-ment (Smith & Hancock).

The Benefits of Caregiving for Grandchildren
In spite of the stressors and challenges grandparents face in caring for grandchil-dren, being a grandparent caregiver has been described as intrinsically rewarding,

as providing a sense of purpose in life, and as contributing positively to maintaining family identity and well-being, including the opportunity to serve as a role model and reap the rewards of close relationships with grandchildren (Hayslip and Kaminski, 2005; Hayslip & Shore, 2000). Grandparents can also directly benefit their grandchildren by providing security for those impacted by substance abuse, divorce, family violence, mental or physical illness, incarceration, or death (Hayslip & Kaminski). In the study by Musil et al. (2010), grandmothers raising grandchildren reported less reward in comparison to grandmothers in multigenerational homes or those not caring for grandchildren. Overall, these reward differences varied by demographic variables of race and age wherein older and White grandmothers reported more reward. Yet, it is important to note that even among grandmothers raising grandchildren, they still rated their caregiving experience as more rewarding than not.

A recent review of ethnic and cross-cultural issues associated with grandparent caregiving (Hayslip, 2009) emphasizes the importance of examining ethnic and racial differences as well as the role of culture and cultural differences in terms of their impact on caregiving. An emerging literature suggests that the experience of grandparent caregiving and its associated stressors and strains vary by ethnicity, race, and culture (e.g., Fuller-Thomson, Hayslip, & Patrick, 2005; Hayslip, 2009; Toledo, Hayslip, Emick, Toledo, & Henderson, 2000). However, little work has focused on the role that ethnicity/race and cultural values may play in influencing benefits of caregiving that help to counterbalance the stressors and strains that accompany the caregiving role. Additional cross-sectional and longitudinal research is also needed to examine resilience, protective factors (e.g., self efficacy, social support, coping), and benefits to caregiving within and across different ethnic, racial, and cultural groups. Additional research on these topics would help extend theoretical frameworks, foster intervention design and implementation, guide practice and program development, and shape policy decisions.

Grandparent Caregiver Interventions

Well-controlled trials to assist grandparents raising grandchildren are lacking in the literature; therefore, interventions incorporating resilience and strength-based approaches are noticeably absent. One notable exception is a controlled trial conducted with 36 grandparents raising grandchildren in which half of the participants were randomized to a psychosocial skills-based intervention and the remainder to a wait-list control condition (Hayslip, 2003). The 6-week intervention focused on key parenting skills (e.g., communication skills, goals of discipline, modeling desirable behavior, developing cooperation); dealing with grief, depression, and anger in grandchildren; communicating about sex and sexually

transmitted diseases as well as drugs and drug abuse; and managing attention-related difficulties and school-related problems. The intervention provided both content delivery as well as open discussion with group leaders about ways participants could handle these key issues. The results proved promising with intervention participants in comparison to their control counterparts reporting lower negative affect scores related to irritation and difficulty with their grandchild's negative behaviors. In terms of potential protective factors, intervention participants relative to controls also experienced increases in both parental self-efficacy and the quality of the relationship with their grandchild.

Hayslip's (2003) psychosocial skills-based intervention was directed at the individual level; however, Hayslip and Kaminski (2005) have pointed out that interventions for grandparent caregivers are needed at multiple levels from the individual and interpersonal levels to the community and culture at large. Building on suggestions from Hayslip and Kaminski, opportunities exist to address barriers to relevant service use by grandparent caregivers through service provider education and training or advocacy programs. Research might also examine barriers in terms of the availability, accessibility, and acceptability of services for the increasingly diverse population of grandparents raising grandchildren. In addition, a variety of educational programs could be offered consisting of a wide range of topics from drug use, sexually transmitted diseases, and health-related topics to school violence, bullying, and technology (computer, smart phones, etc.). Moreover, skills training interventions that expand other skills-based programs, such as Hayslip's (2003) intervention, and assist grandparents with effective communication, mood and stress management techniques, grief and loss, and effective parenting techniques might prove effective in building resilience and reducing negative outcomes for caregiver and grandchild.

Musil and her colleagues (2010) have suggested that interventions grounded in resourcefulness training may be especially useful for grandparents regardless of caregiving status to improve overall quality of life, particularly for depressed individuals. Learned resourcefulness is tied to self-control skills that are related to cognitive behavioral strategies designed to manage stressful circumstances including cognitive reframing, problem-solving strategies, and self-regulatory processes (Musil et al., 2006). These skill-based efforts could be combined with support groups or other opportunities to help grandparent caregivers meet one another and reduce social isolation. Multicomponent interventions that combine intervention approaches and strategies from different levels of interventions might be particularly powerful for grandparent caregivers who will often need to interface with a variety of new entities (e.g., schools, clubs, new health providers, social services).

DIRECTIONS FOR FUTURE RESEARCH, PRACTICE, AND POLICY

Definitions and Distinctions

Both the dementia caregiving and grandparent caregiving literatures would benefit from discourse regarding the similarities and differences between resilience and other concepts like hardiness, their related measures, and their association with mental and physical health outcomes. Given the length of time many family caregivers serve in their roles, these caregiving literatures also would benefit from research that moves beyond the assumption that the absence of negative outcomes maps directly onto the presence of positive outcomes. Research needs to build on findings that caregivers may hold both negative and positive feelings about caregiving as well as their other roles and responsibilities. Because this chapter reviewed dementia caregiving and grandparent caregiving, the findings cannot automatically be extended to caregivers in other situations caring for family and friends facing other illnesses or impairments. Yet, most work in family caregiving has not concentrated on resilience and its protective factors, raising the probability that many opportunities exist to learn from one another's research efforts and practice experiences. The opportunity also exists to examine the topic from a wide variety of perspectives such as gender, relationship, ethnicity, race, and cultural group. For example, Pinquart and Sörensen's (2011) recent meta-analysis of 168 empirical studies compared spouses, adult children, and children-in-law caregivers to older adults on sociodemographic characteristics, caregiver stressors, caregiver distress, and caregiver resources. Like other studies in the literature, this research was comprised of caregivers for older adults struggling with a variety of illnesses and impairments. In terms of protective factors, spousal caregivers reported less informal support and lower levels of instrumental coping when compared with other caregiver groups, and adult children serving as caregivers perceived more caregiving uplifts than adult child-in-law caregivers. Spouses also described higher levels of care provision, more depressive symptoms, lower levels of psychological well-being, poorer physical health, and more physical, financial, and relationship strain. Additional analyses by the authors suggested that the differences in psychological distress may be explained by the greater needs of the care recipient, higher levels of care provision, poorer physical health of the caregiver, sociodemographic variables (e.g., caregiver lower educational attainment, younger age of the caregiver, being employed, living with the care recipient), and lower levels of protective factors (e.g., less informal support and less instrumental coping). Similarly, caregiving uplifts appeared to be driven by better relationship quality with the care recipient and lower educational attainment of the caregiver (Pinquart & Sörensen). These findings help underscore the need for ongoing work related to resilience and its protective factors across various groups of family caregivers.

Models of resilience (e.g., McCubbin et al., 1996; Zautra et al., 2010) warrant additional attention in the family caregiving literature, including the use of models that help articulate the connections between resilience and its related protective factors across transitions in the caregiving trajectory. As one example, Zautra and his colleagues (2010) define resilience as adaptive responses to adversity and describe three key components of adaptive outcomes: recovery, sustainability, and growth. Family caregiving and its career trajectory from beginning to end could be conceptualized as encompassing all three and generating a number of lines of research studying resilience and its protective factors, moderators, mediators, and outcomes. Examples of these adaptive outcomes in family caregiving might include *recovery* after a crisis episode or acute stressor like the extended disappearance of a wandering dementia patient or a lost grandchild; *sustainability* of one's emotional and physical well-being in face of ongoing stressors, whether because of the ongoing behavior problems of loved one with Alzheimer's or an 8-year old with ADHD that has turned retirement plans upside down; and *growth* that captures new insights including understanding one's enhanced capacities for adaptation such as the cognitive flexibility needed to enter the world of a late-stage dementia patient or autistic child in order to provide comfort and safety.

Methodological Issues

Both the dementia caregiving and grandparent caregiving arenas need prospective, longitudinal studies grounded in innovative frameworks that investigate resilience and protective factors from role acquisition through role release. This research should more fully consider individual difference variables from sociodemographic characteristics and psychological and social resources to other aspects of the sociocultural context including interpersonal issues, cultural variables, the availability, accessibility and acceptability of services, system and organizational factors, and local and national policy. In these uncertain economic times and with the silver tsunami of the baby boomer generation upon us, aging research in general needs longitudinal research investigating resilience with multigenerational families that identifies factors associated with successful adaptation across transitions in family care. The resilience literature on family caregivers would advance more quickly through studies employing mixed-methods designs that build on the cumulative strengths of both qualitative and quantitative research traditions as well as methods applied in other resilience research (e.g., Zautra et al., 2010) such as daily diary studies exploring resilience and both positive and negative affect. Mausbach, Coon, Patterson, and Grant (2008) in their daily diary research with Alzheimer's caregivers discovered that although the total number of pleasant activities was significantly related to only positive affect, the pleasure

obtained from those activities was significantly related to both positive and negative affect. Notably, these types of studies could be extended to examine positive and negative affect in relationship to resilience, protective factors, and the components of recovery, sustainability, and growth. Such work could provide critical insights to theoretical models and help guide practitioners in intervention development and delivery.

Intervention and Practice

The grandparent caregiving literature in particular suffers from a lack of well-controlled intervention studies, in general, much less the investigation of moderators and mediators of treatment response. As stated earlier in terms of dementia family caregiving, moderators of treatment response can identify potential screening tools for more effective treatment assignment (Gaugler et al., 2007; Rabinowitz et al., 2006). In addition, the dementia caregiving literature needs to move to the next level of inquiry by testing intervention impacts on physiological health outcomes and the role that resilience and protective factors play in these processes. Interventions that enhance resilience and target recovery, sustainability, or growth to impact health outcomes could be designed and tested for dementia caregivers and grandparent caregivers alike.

To date, the vast majority of research with family caregivers of impaired older adults has focused on family members caring for loved ones at the moderate stage of dementia (Coon et al., in press; Gallagher-Thompson & Coon, 2007). The gerontology literature would benefit from interdisciplinary resilience-focused research with caregivers at other stages of dementia as well as with caregivers for loved ones with other illnesses or impairments (e.g., older adults with cancer or psychiatric problems). The study of various cultural groups is needed among both dementia family caregivers and grandparent caregivers to help develop new or tailor existing interventions to enhance resilience or build from a strengths-based approach. More fundamentally, researchers ought to delve more deeply into the identification of similarities and differences in resilient ways of being, thinking, and doing across different cultural groups (Zautra et al., 2010) to help guide practice, policy, and future research. Very little is known regarding the longer term impact of empirically supported interventions for family caregivers, the cost effectiveness of interventions, or the best ways to integrate interventions into employer-based programs, existing social services, or health care systems (Coon et al., in press; Gallagher-Thompson & Coon, 2007; Sörensen & Conwell, 2011). Resilience and strength-based approaches are also likely to play important roles here, especially when combined with multicomponent and multi-level intervention across caregiving trajectories that help individuals, families, organizations and systems, and communities with recovery, sustainability, and growth.

Most interventions with family caregivers focus at the individual level by meeting with primary caregivers either individually or in small groups. Family caregiver intervention research including research focused on resilience needs expansion beyond the individual level to encompass interpersonal, systems/organizational, community, and policy levels. For example, how can a dyadic intervention for spouses that are new grandparent caregivers help foster resilience? How can a dyadic intervention for newly identified people with early stage dementia and their future care partners enhance sustainability and growth? How do organizations, systems, communities, and policies impede or promote resilience and positive aspects of caregiving (Coon et al., 2003; Zautra et al., 2010)? These levels, their interaction with caregiver interventions, and their impact on resilience can be explored in multiple ways from school systems to long-term care facilities. Moreover, these levels may impact various types of family caregivers in distinct ways. For example, although planned retirement communities might be supportive of a spouse caring for a partner with dementia, they may be less supportive of a grandparent suddenly responsible for multiple children and teens.

At the policy level, the National Family Caregiver Support Program allocates funding from the federal government to the states to partner with local community service providers to provide a variety of services for family caregivers to help sustain them in their caregiving roles (Coon et al., 2003; Hayslip & Kaminski, 2005). In another policy recommendation, Swanke and Zeman (2009) recommend care managers identify family medical leave as a resilience resource, providing family caregivers with increased flexibility and equality that enhances decision making, access to providers, and the ability to manage crises. Finally, caregiver research would benefit from strategic partnerships among practitioners, researchers, and policy makers that creates ongoing dialogues between evidence-based practice and practice-based evidence. Practitioners can help identify practical interventions and related screening and assessment tools as well as provide insights into ways to help tailor interventions for diverse groups of family caregivers. Working with practitioners and policy makers, clinical researchers are more likely to consider interventions across multiple levels and investigate critical linkages between levels that would advance resilience research, practice, and policy related to family caregiving.

Concluding Thoughts

In 2010, almost 15 million Americans provided 17 billion hours of care to family and friends with ADRD. The economic value of this informal care as measured by the cost of replacing the informal (unpaid care) with formal (paid care) was more than $202 billion—an amount that is more than Medicare and Medicaid

spending on those with ADRD combined (Alzheimer's Association, 2011). This amount expands exponentially when extended to Americans providing unpaid care to impaired adults without dementia. The debt society owes to caregivers continues to burgeon when custodial grandparent caregivers are added to these efforts. Without this informal caregiver workforce, our social service and health care systems clearly would be in jeopardy.

In sum, the results of this review emphasize the need to continue to move research, practice, and policy related to family caregiver resilience forward to help sustain these individuals, our communities, and society. This requires the application of more rigorous research approaches related to resilience including mixed-methods and prospective longitudinal designs, the use and testing of relevant theoretical frameworks, and the examination of interventions at different levels that target both mental and physical health outcomes with diverse populations. These steps will help to advance work in resilience with family caregivers. It will also provide clinical researchers, practitioners, program developers, and policy makers with stronger evidence to guide the development and evaluation of caregiver interventions as well as the targeting, tailoring, timing, and dosing of those interventions to improve their effectiveness and help translate, embed, and sustain them in the community.

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CHAPTER 13

Personal Risk and Resilience Factors in the Context of Daily Stress

Manfred Diehl, Elizabeth L. Hay, and Helena Chui

ABSTRACT

This chapter focuses on the role that personal risk and resilience factors play as adults of all ages cope with the stressors encountered in everyday life. Theorists have suggested that researchers should focus on the effects of daily stress and coping rather than focusing exclusively on major life events and chronic stress and have proposed that understanding how adults cope with daily stress is a key aspect of understanding long-term well-being and adaptation in adulthood. After presenting a conceptual model outlining the major components of the daily stress process, the chapter reviews the existing empirical literature on personal risk and resilience factors in the context of daily stress. This research clearly suggests that there is no universal generalization that can be made regarding whether chronological age, in and of itself, confers greater vulnerability or resilience onto adults. Instead, we argue that researchers should ask *when and under what conditions* is age associated with *greater vulnerability* to daily stress and *when and under what conditions* is age associated with *greater resilience* to daily stress. Age differences in reactivity to daily stress are clearly embedded within a complex system of factors—structural, individual, and situational—that influence stress reactivity and stress recovery in several ways. This complexity should not be taken to mean that stress reactivity and recovery cannot be charted or understood.

Researchers, however, will need to approach this complexity with a great deal of theoretical, methodological, and statistical rigor to move our understanding of the importance of age in shaping risk and resilience to daily stress forward. The final section of the chapter outlines several directions for future research in the area of aging and resilience. In particular, we argue that a focus on personal risk and resilience factors in the context of daily stress, in combination with the application of sophisticated statistical methods (e.g., dynamic systems modeling), will contribute to a more dynamic and person-centered understanding of processes of resilience.

INTRODUCTION

The role and effects of risk and resilience factors in coping with stress have traditionally been studied in the context of life events and life transitions (Ryff, Singer, Love, & Essex, 1998), or in the context of chronic conditions of disadvantage and adversity (Masten, 2001). However, as research on stress and coping has increasingly moved from the laboratory to real-life settings (Zautra, 2003), this focus has shifted toward the role that such factors play in coping with daily stress (Diehl & Hay, 2010). The focus on daily stress was first advocated by Richard Lazarus and his colleagues in their work on the effects of daily hassles on adults' health (DeLongis, Coyne, Dakof, Folkman, & Lazarus, 1982). Lazarus and Folkman (1984) defined daily hassles as "the little things that can irritate and distress people" (p. 13). Thus, daily stressors are different from major life events and chronic stress, such as the burden of caregiving (see the chapter by Fagundes, Gillie, Derry, Bennett, & Kiecolt-Glaser in this volume) or the stress resulting from a chronic health problem (see the chapter by Lavretsky in this volume), in that they often happen unexpectedly and are time-limited in their occurrence and effect. Typical examples of daily stress are having an argument with another person, getting stuck in a traffic jam while running late for a meeting, or getting some bad news. Although daily hassles tend to be less dramatic than major life events or chronic stressors, researchers assume that daily stressors can pile up within and across days, and can turn into chronic stressors if no resolution is found (e.g., continuous discord with one's spouse). Therefore, Lazarus and Folkman (1984) proposed that daily stressors may be more important for a person's long-term adaptation, health, and well-being than major life events (see also Almeida, 2005).

This chapter provides a review of the theoretical and empirical literature on *personal* risk and resilience factors in the context of daily stress. Risk factors are those personal characteristics that increase the person's vulnerability to daily stress, whereas resilience factors protect the individual against the negative effects of daily stressors. This review has three major parts. The first part presents

a conceptual framework that places personal risk and resilience factors into an overall process model of coping with daily stress. The second part reviews the findings of empirical studies with a specific focus on personal risk and resilience factors, and the final section outlines recommendations for future research and applied work with adults.

Throughout this chapter, we propose that in the context of daily stress, *resilience* is most appropriately defined as an individual's ability to maintain optimal functioning and to preserve the capacity for growth and positive adaptation despite the onslaught of daily challenges that can threaten the person's physical and/or psychological well-being (Ryff et al., 1998; Zautra, Hall, & Murray, 2010). In the context of daily stress, resilience is specifically indicated by the ability to quickly *recover* from the negative effects of the stressful events (e.g., reducing the negative emotions caused by a stressor) and by the *maintenance* of positive adaptation in the face of recurring stressors, as indicated by long-term psychological well-being (Zautra et al., 2010). Thus, although we acknowledge that resilience can be defined in several ways (e.g., as a trait, a process, or an outcome), we advocate a person-centered approach and focus our attention on those *personal characteristics* that facilitate or impede (a) an individual's recovery from the negative effects of daily stress and (b) the maintenance of positive adaptation and well-being over time. Overall, this view is more dynamic than a strict trait perspective of resilience and focuses on an individual's personal and social resources as they are activated in response to the situational demands and challenges that occur in peoples' daily lives.

A PROCESS MODEL OF DAILY STRESS

One of the most challenging observations in stress and coping research has been the great heterogeneity in individuals' reactions to life stressors (Lazarus, 1999; Ong & Bergeman, 2004). This heterogeneity in stress responses suggests that individuals' reactions to the same stressor are highly idiosyncratic and depend on several personal and contextual variables. A conceptual model that delineates the major personal and contextual variables involved in coping with daily stress was presented by Almeida (2005; see Figure 13.1).

Almeida's (2005) model incorporates aspects of life-span development as well as findings of the stress and coping literature. Similar to Lazarus and Folkman (1984), Almeida defined daily stressors as those challenges that disrupt established routines or challenge a person's physical, social, or psychological resources. Daily stressors may arise out of routine situations such as work or family life, or they may be unexpected events such as an unanticipated argument with another person or having a piece of equipment break down. Daily stressors
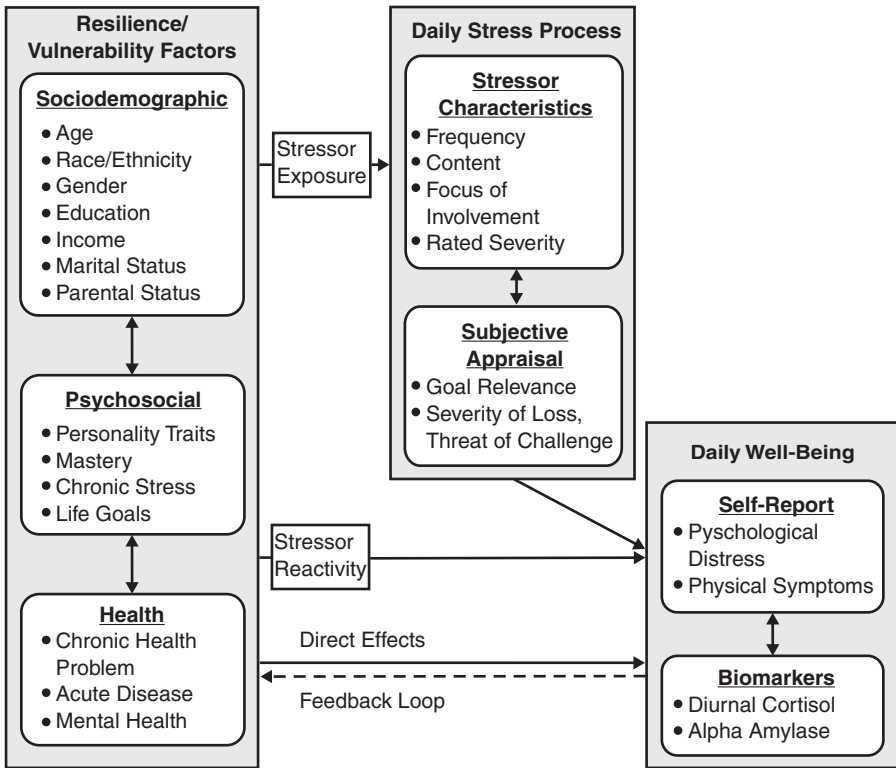
FIGURE 13.1 Daily stress process model. Adapted from "Resilience and vulnerability to daily stressors assessed via diary methods" by D. M. Almeida, 2005, *Current Directions in Psychological Science, 14*, p. 65. Reprinted with permission.

have characteristics that can be assessed objectively, such as their frequency, content, focus of involvement, and severity. These characteristics are also associated with *subjective appraisals* that people form in response to the stressor. The key aspect of daily stressors, however, is that daily stressors have an *immediate effect* on the person's emotional and physical functioning on the day they occur. In addition, they have the potential to carry over to following days and to turn into chronic stressors. Stress researchers theorize that how individuals cope with daily stress will, in the long run, have effects on their general physical and mental health and may affect their vulnerability to developing long-term problems, such as depression or anxiety-related disorders (Zautra, 2003). Thus, although Almeida did not address issues of resilience per se, in an all encompassing stress and resilience model, daily stressors might themselves also be conceived of as

risk factors that are capable of eroding a person's long-term well-being and his or her capacity to recover from other kinds of challenges.

Almeida's (2005) model also includes *vulnerability and resilience factors* (in this chapter called *risk and resilience factors*) that affect how individuals respond to the occurrence of daily stressors. These risk and resilience (i.e., protective) factors include sociodemographic, psychosocial, and general health-related characteristics. As stated earlier, risk factors increase individuals' vulnerability to the negative effects of daily stress, whereas resilience factors help individuals master the challenges of daily stress. As several authors have pointed out (Almeida, 2005; Lazarus, 1999; Ong & Bergeman, 2004; Zautra, 2003), the relations among these factors are currently not well understood, especially in terms of their long-term interplay and long-term outcomes. Sociodemographic factors, for example, have been shown to be associated with differential rates of stress exposure and, over time, seem to contribute to disparities in resources and overall health outcomes (Robert & Ruel, 2006). Indeed, one could argue that many sociodemographic variables (e.g., age, income, education, occupation) can be either risk or resilience factors depending on an individuals' specific circumstances. Personality characteristics, such as control beliefs or emotional stability, have also been shown to play a role in how individuals cope with stress and have been linked with health outcomes (Mroczek & Almeida, 2004; Neupert, Almeida, & Charles, 2007). Similarly, preexisting health and life stress conditions (e.g., chronic health problems; chronic life stress; Serido, Almeida, & Wethington, 2004) as well as the availability of social resources, such as social support, has been shown to affect the coping process (Rook, 2003). Figure 13.1 shows that risk and resilience factors are postulated to affect the health and well-being outcomes indirectly through the path of *stress exposure* and directly through the path of *stress reactivity*. The model also specifies a feedback loop from the outcomes back to the risk and resilience factors. Notably, this feedback loop suggests that successful coping may increase an individual's resilience, whereas deficient coping may further increase a person's vulnerability. Although these processes, in general, also apply to chronic stressors and the effects of life events, in this chapter we address them specifically in the context of daily stress. Daily stressors are unique and different from chronic stressors because they have an acute effect on a person's behavior and well-being, and often require an immediate response to prevent further escalation.

Overall, this model provides a reasonable framework that can guide further theorizing and empirical research on the role of risk and resilience factors in the context of daily stress. In this chapter and in the subsequent review of the empirical literature, we will focus on one specific sociodemographic variable, namely chronological age and several personality characteristics such as neuroticism,

self-concept differentiation, or beliefs of control, as risk or resilience factors that have been studied in daily stress research. Although we recognize that these personal risk and resilience factors do not operate in a social vacuum, our research so far has not addressed the role of social resources, and a detailed discussion of the role of social risk and resilience factors is beyond the scope of this chapter (see Ong & Bergeman, 2010). We return to the role of social resources in the final section of the chapter.

REVIEW OF EMPIRICAL RESEARCH

A body of literature is emerging based on studies that have examined individual differences in reactivity to and recovery from daily stress. Because of theoretical developments, such as the model presented by Almeida (2005), this research is increasingly cast within a framework of risk versus resilience, and researchers have examined a variety of factors that may influence adults' reactivity to stress, including sociodemographic factors as well as stable and variable individual and situational factors. For example, when examining reactivity to daily stressors, researchers have considered the importance of chronological age (Birditt, Fingerman, & Almeida, 2005; Diehl & Hay, 2010; Neupert et al., 2007), neuroticism (Mroczek & Almeida, 2004), general beliefs of control (Neupert et al.), and global stress (Stawski, Sliwinski, Almeida, & Smyth, 2008) among others. Indeed, theoretical work on resilience has emphasized that resilient behavior is characterized by multiple factors (Ong & Bergeman, 2010). Thus, daily stress research with its focus on how multiple factors (i.e., different types of stressors as well as characteristics that may enhance or erode resilience) work together to produce adults' developmental outcomes, and well-being represents an important avenue in understanding the phenomenon of resilience.

At present, studies using daily diary and interview methods or ecological momentary assessment methodologies to examine daily stressors have shown that adults exhibit both positive and negative emotional reactivity (Smyth et al., 1998; Uchino, Berg, Smith, Pearce, & Skinner, 2006) and physical reactivity to stressors (Hay & Diehl, 2010; Neupert et al., 2007). Such research, however, typically considers risk and resilience factors in isolation from one another and has yet to consider how, all together, they may promote or detract from resilience. Despite such limitations, in the following section, we review the findings from these studies and what they suggest about adult development, aging, and resilience.

Age and Reactivity to Stress

Several studies have considered the role of age in daily stress and researchers have varied in terms of whether they consider age and age-associated factors such as

physical health, cumulative life stress, or marital status to render adults more vulnerable to stress (e.g., Mroczek & Almeida, 2004) or to confer some degree of resilience on adults (e.g., Uchino et al., 2006). Overall, research suggests that the rate of exposure to daily stressors tends to decline with age (Almeida & Horn, 2004; Stawski et al., 2008). Thus, when it comes to daily stress, older adults tend to be at an advantage over younger adults simply in terms of the number of stressors they have to contend with.

Findings regarding the role of age in terms of *reactivity* to daily stress, however, are more equivocal. For instance, Mroczek and Almeida (2004) showed that daily stress such as having had an argument with someone, stressful events at work or at home, or having had something bad happen to a relative or close friend was more strongly associated with negative affect among older versus younger adults. This suggests older adults are more vulnerable to the detrimental effects of daily stress than younger adults. Other researchers, however, have found the opposite. Uchino et al. (2006), for example, reported that older individuals showed less of an increase in negative affect during episodes of daily stress compared to their younger counterparts. Still, other research finds no age differences in emotional reactivity to stress (Stawski et al., 2008).

These mixed findings very likely reflect numerous factors. Studies differ, for example, in the kinds of outcomes they consider (e.g., physical vs. psychological outcomes), in the age ranges of included participants, and in whether age differences in stressor exposure are considered. A closer look at the ages considered in recent studies, for example, reveals that participants in Mroczek and Almeida's (2004) study were adults who ranged in age from 25 to 74 years, whereas Uchino et al.'s (2006) sample ranged in age from 36 to 75 years of age. Both samples, therefore, did not include the oldest old, a group that some researchers have argued may show lowered reactivity to stress as a consequence of (a) lowered physiological reactivity (Levenson, 2000), (b) less stress exposure (Stawski et al., 2008), and (c) more effective proactive coping (Diamond & Aspinwall, 2003). On the other hand, the oldest old could potentially be an age group that is very vulnerable in terms of daily stress when it occurs. This may be especially the case if daily stressors pile on to existing chronic stressors, such as a chronic health condition. Further data, preferably from longitudinal studies, are needed to address these open questions and to provide a clearer understanding of the role of age in coping with daily stress.

Research increasingly suggests that it is very likely that age differences in reactivity to stress are conditioned by other factors, including differences in adults' perceptions of personal control, personality traits and self-perceptions, and the types of stressors they are exposed to. To truly understand the role of age in resilience and reactivity to stressors, it is therefore necessary to consider age

within the larger context of person-specific risk and resilience factors. Thus, we direct our attention to those studies that have examined the effect of age in the context of such person-specific risk and resilience factors.

Age, Perceptions of Control, and Reactivity to Stress

In keeping with a long history of work showing that personal control beliefs play an important role with regard to adjustment and well-being (Bandura, 1997), research on daily stress has begun to consider the role that perceptions of control play in reactivity to daily stressors. Perceptions of control develop and change as individuals navigate events that confirm, or disconfirm, their beliefs about control (Eizenman, Nesselroade, Featherman, & Rowe, 1997). Theory and research suggest that adults' general perceptions of control are relatively stable and trait-like, but that they are not completely invariant. Notably, adults' perceptions of control vary across life domains (Lachman & Weaver, 1998) and exhibit both long-term change and short-term variability (Eizenman et al.). Research on daily stress has shown that greater traitlike perceptions of control are associated with lower reactivity to stressors in daily life. For example, Neupert et al. (2007) reported findings from the National Study of Daily Experiences showing that lower levels of perceived control were related to greater emotional and physical reactivity to stressors in the interpersonal and work domain, and to greater emotional reactivity to network stressors.

A growing body of research also suggests that adults' perceptions of control vary from day-to-day and may influence health outcomes and be associated with reactivity to daily stress (e.g., Ong, Bergeman, Bisconti, & Wallace, 2006). For instance, Ong et al. (2006) showed in a daily diary study with bereaved women that the stress-anxiety association was significantly reduced on days of greater perceived control. As well, Hay and Diehl (2010) showed that daily perceptions of control were associated with reactivity to stress in varying ways depending on the stressor type and age of the adults. For instance, data from this study showed that interpersonal stressors were not associated with increased psychological distress when adults perceived having high control on a given day; however, interpersonal stressors were associated with increased psychological distress on days that adults perceived having little control (Hay & Diehl, 2010; see Figure 13.2).

Research also suggests that the importance of perceptions of control for adults' reactivity to stress may vary across adulthood. For instance, Neupert et al. (2007) found that emotional reactivity to stressors in a person's social network (i.e., network stressors) depended on age and perceived control. In particular, young and middle-aged adults showed greater reactivity to network stressors when they perceived low control, whereas older adults' reactivity to network stressors was unrelated to their level of perceived personal control. Although
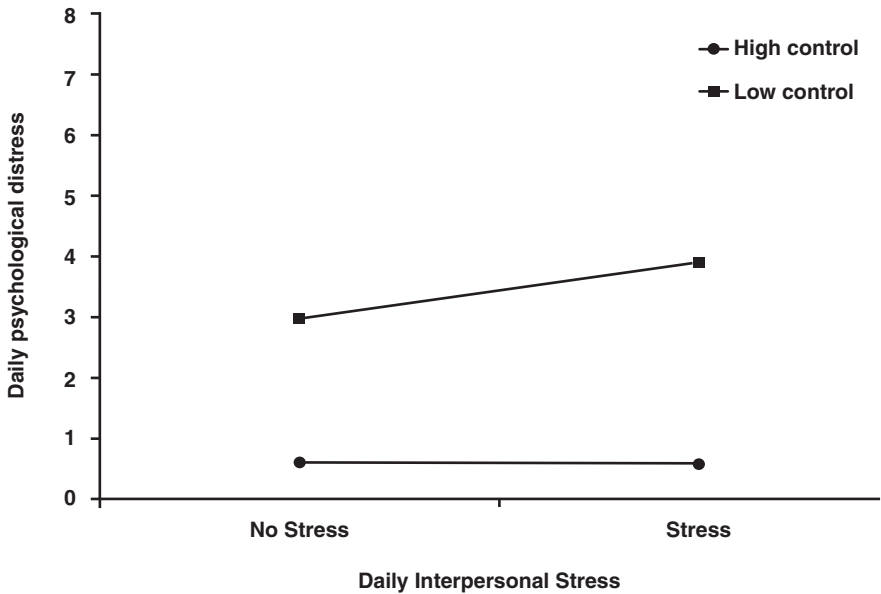
FIGURE 13.2 The influence of level of control on adults' reactivity to daily interpersonal stress.

these age differences in personal control have to be interpreted with caution because they are confounded with potential cohort effects, if they were indicative of true developmental change, then this would suggest that age-related changes in personal control positively affect older adults' resilience in the context of daily stress (i.e., in that perceiving low control is no longer detrimental).

Taken together, findings from these studies suggest that beliefs of personal control do not only matter as an individual difference variable (i.e., between-person characteristic), but that they also play an important role as a *within-person characteristic* when individuals cope with daily stress (see also Eizenman et al., 1997). Next, we will discuss research that has examined the effects of age in the context of other person-specific characteristics, such as personality traits and self-representations.

Age, Neuroticism, Self-Representations, and Reactivity to Stress

Several studies have examined the role of personality traits and the self-concept regarding reactivity to daily stress. Notably, early work showed that individuals high in neuroticism were more emotionally reactive to stressors than individuals low in neuroticism (Marco & Suls, 1993). Adults with high neuroticism scores appear to be particularly vulnerable to interpersonal stressors compared to adults who score low on neuroticism (Bolger & Schilling, 1991).

Several studies have also considered the importance of adults' self-representations or self-concept for stress reactivity. The terms "self-representations" or "self-concept" are used here interchangeably to refer to those attributes that are (a) part of a person's self-understanding and self-knowledge, (b) the focus of self-reflection, and (c) consciously acknowledged by the person through language or other means of communication. In general, research has focused on two features of adults' self-representations, namely their *content* and *structural organization*. First, there are several studies that have focused on the content of adults' self-representations such as individuals' sense of self-esteem. Kernis (2003), for example, has examined the association between self-esteem stability and psychological functioning in young adults (i.e., college students). Kernis' studies have shown that young adults whose self-esteem was unstable responded to daily stressors with greater fluctuations in depressive symptoms and also showed higher levels of overall depressive symptomatology. To date, similar research does not exist for older adults, and it remains an open question whether self-esteem stability serves as a similar resilience factor in later life when individuals' well-being is challenged by the occurrence of certain daily stressors (Brandtstädter & Greve, 1994).

The second line of research has focused on how adults' self-representations are structurally organized (e.g., Rafaeli-Mor & Steinberg, 2002). Researchers have focused on the structural organization of individuals' self-representations because it has been assumed that different self-concept organizations are associated with different ways of processing self-relevant information, which, in turn, are associated with either adaptive or maladaptive outcomes (Diehl & Hay, 2010; Rafaeli-Mor & Steinberg, 2002). Research on a variety of different, but related, aspects of adults' self-concepts suggests that self-concept organization is associated with stress reactivity. For instance, Zeigler-Hill and Showers (2007) showed that individuals who described their self-concepts using both positive and negative attributes within roles (i.e., integrated organization) were less reactive to daily stress than individuals who used primarily positive or negative attributes to describe themselves within roles (i.e., compartmentalized organization). Similarly, McConnell, Strain, Brown, and Rydell (2009) found that individuals low in self-complexity (i.e., who described themselves as being relatively similar across the different domains/roles of their lives) were more reactive to negative life events than individuals high in self-complexity. Irrespective of negative life events, however, McConnell et al. also found that adults high in self-complexity had poorer psychological well-being than adults low in self-complexity.

Building on work in the area of self-concept development, our research team has considered the role of *self-concept differentiation* (*SCD*) in stress reactivity (Diehl & Hay, 2010; Hay & Diehl, 2010). SCD reflects the extent to which individuals see themselves differently across different roles and domains of life

and fits within the larger literature on how self-knowledge is associated with processes of self-regulation and psychological well-being (Rafaeli-Mor & Steinberg, 2002). Two main perspectives exist on the adaptive value of SCD and related constructs. Some authors (Gergen, 1991; Linville, 1987) have argued that greater self-complexity is adaptive because the negative effects of stressors experienced in one role are less likely to "spill over" into other roles. This perspective is consistent with the view that individuals who are specialized within social roles can respond more flexibly to role-specific demands (Gergen). In contrast, the second perspective argues that individuals with a highly differentiated self-concept lack a coherent sense of self and show a fragmented identity that may undermine their sense of biographical continuity and meaningfulness (Brandtstädter & Greve, 1994). Based on this perspective, individuals with a highly differentiated self-concept would therefore be expected to show poorer coping with daily stress and, over time, maladaptive outcomes.

At present, research on the role of SCD in stress reactivity is somewhat limited and study findings are mixed. This seems to reflect the fact that the role of SCD in stress reactivity appears to be moderated by additional risk and resilience factors, including individuals' chronological age. Indeed, in our research, we have found that self-concept structure moderated age differences in adults' reactivity to stress (Hay & Diehl, 2010). For instance, we showed that older adults with low SCD (i.e., high self-concept coherence) were particularly resilient to daily stressors that occur within the home domain (e.g., home demands and family responsibilities) when compared to younger adults. In contrast, possessing low SCD did not confer any degree of resilience on young adults coping with home stressors. For older adults, therefore, having a particular self-concept structure, such as having a highly differentiated self-concept, may be particularly maladaptive when they are confronted with certain types of stressors. These findings are consistent with some theorists' propositions that individuals' self-representations may be particularly important in old age when negative age-related changes, such as cognitive decline or losses of friends and family, challenge a person's self-concept (e.g., Brandtstädter & Greve, 1994; Freund & Smith, 1999).

Currently, relatively little research examines *how* the structural organization of adults' self-representations influence reactivity to stress. Indeed, some researchers in this area have begun to call for a greater focus on examining the precise mechanisms through which self-concept attributes and structures influence reactivity to stress (Hay & Diehl, 2010). It is clear, nonetheless, that the ways in which adults think about themselves influence their reactivity to daily stressors and theoretical and empirical work increasingly suggests that the structural organization of these self-representations may be a particularly important source of resilience when older adults are faced with stressors.

Age and the Importance of Stressor Domain in Influencing Reactivity to Daily Stress

Similar to research in the laboratory, research on daily stressors has shown that not all stressors are created equal, and investigators have examined reactivity to various stressors, including interpersonal, work, network, and home stressors (e.g., Bolger, DeLongis, Kessler, & Schilling, 1989; Hay & Diehl, 2010; Neupert et al., 2007). Research clearly suggests that interpersonal stressors are more relevant to daily well-being than other stressors (Bolger et al.; Neupert et al.). Age differences in reactivity to stressors may, therefore, depend on the stressor under consideration and the importance of age for stress reactivity may look quite different when stressors are considered overall versus within specific life domains or social roles. Indeed, in analyses that aggregated multiple types of stressors, Mroczek and Almeida (2004) found that a higher age was associated with increased reactivity to stress. Subsequent studies drawing on the same sample, however, showed that age was associated with reduced reactivity to *interpersonal* stressors (Birditt et al., 2005; Neupert et al., 2007) and unrelated to reactivity to *home*, *work*, or *network* stressors (Neupert et al.) when a domain-specific approach was taken. These latter findings suggest that older adults seem to respond to certain stressors differently than younger adults. Especially in the interpersonal domain, older adults seem to apply more proactive coping strategies (Diamond & Aspinwall, 2003), which is consistent with other research on age differences in coping strategies (Diehl, Coyle, & Labouvie-Vief, 1996) and with the major propositions of socioemotional selectivity theory (Carstensen, Isaacowitz, & Charles, 1999). However, longitudinal data are needed to draw more definitive conclusions and to rule out that these observed age differences are indeed caused by age-related changes and not due to cohort differences.

Compared to younger adults, older adults experience fewer interpersonal stressors and may be less reactive to them (Birditt et al., 2005; Neupert et al., 2007), although not all research shows such age differences (Hay & Diehl, 2010). Older adults may be more resilient to the detrimental effects of interpersonal stressors because of improvements in emotion regulation with age (Carstensen, Pasupathi, Mayr, & Nesselroade, 2000), more proactive coping in the interpersonal domain (Diamond & Aspinwall, 2003), or as a result of other risk and resilience factors that interact with age, or as a combination of all three processes. For instance, Neupert et al.'s (2007) research suggests that when young adults perceive low control, they are particularly reactive to interpersonal stressors. In contrast, older adults' reactivity to interpersonal stressors does not appear to be heightened when they perceive low control. Such a pattern suggests that risk factors that heighten vulnerability to stress at younger ages may no longer exert the same effect in later adulthood.

Adults, of course, are not just exposed to interpersonal stressors but also experience a variety of other stressors, including home stressors, family demands, and social network stressors. Research shows that although these stressors do not have the great impact of interpersonal conflicts and stressors, they can still have detrimental emotional and physical effects (e.g., Hay & Diehl, 2010; Neupert et al., 2007). Furthermore, as noted earlier, understanding how stressors and challenges accumulate in the context of risk and resilience factors may be key to disentangling why some adults appear more resilient than others. However, research on the effects of stress pileup from different life domains and within and across days is currently very limited (see, for example, Grzywacz & Almeida, 2008). Thus, additional research is very much needed in order to gain a better understanding of the short- and long-term effects of cumulative risk resulting from stressors in adults' daily lives in general and in old age in particular.

Interestingly, despite the fact that older adults are at greater risk of experiencing health-related stressors, Hay and Diehl (2010) found that younger adults were actually more physically reactive to health stressors than older adults. Such a pattern may reflect that older adults perceive a certain degree of health stress as being normative (Leventhal & Crouch, 1997) and such a perception may offer a certain degree of resilience to health stressors, particularly if they are relatively mild. Alternatively, age differences in reactivity to health stressors may reflect age differences in the types of health stressors individuals encounter, with older adults experiencing higher rates of chronic conditions and younger adults experiencing more acute illnesses and accidents (National Safety Council, 2006; Manton, 1997).

Research also suggests that younger and middle-aged adults experience more *home stressors* than older adults (Almeida & Horn, 2004). At first glance, research suggests that there are few, if any, age differences in reactivity to home stressors (e.g., Neupert et al., 2007). However, Hay and Diehl (2010) showed that older adults with lower SCD (i.e., a more coherent self-concept) were particularly resilient to home stressors when compared to younger adults. In contrast, having a more coherent self-concept did not confer any resilience on young adults who reported home stressors.

Stressors that happen to close friends or family members, called *network stressors*, also influence adults' daily mood and physical symptoms. Research by Neupert et al. (2007) suggests emotional reactivity to network stressors depends on both age and perceived control. Specifically, Neupert et al. showed that younger and middle-aged adults were more reactive to network stressors when they perceived having little control. Interestingly, however, the same association did not hold for older adults. Instead, older adults with high levels of mastery were equally reactive to network stressors as older adults with low levels of mastery.

It is not obvious why perceptions of control should play a role in younger, but not older adults' reactivity to network stressors. Indeed, research by Hay and Diehl (2010) found no evidence that age or perceptions of control influenced psychological reactivity to network stressors. Hay and Diehl speculated that because network stressors, by definition, happen to other individuals, adults' own repertoire of coping strategies and their own perceptions and characteristics (e.g., age, perceived control, SCD) may be less relevant in determining resilience and may, therefore, not be as likely to mitigate the distress arising from such stressors.

Overall, therefore, research suggests that adults' reactivity to stress is shaped by a variety of personal risk and resilience factors that interact in different ways across stress domains and the course of adulthood. This complexity means that relatively simplistic studies that only consider the main effects of personal risk and resilience factors or conceive all stressors as being equal will be unlikely to move our understanding of resilience to daily stress forward in substantial ways. Indeed, researchers are increasingly moving toward more complex models of stress reactivity (e.g., Almeida, 2005; Diehl & Hay, 2010). Notably, researchers are increasingly calling for studies that draw on the work we have reviewed in this chapter and also incorporate the large body of work on physiological aging and stress (e.g., see the chapter by Fagundes, Gillie, Derry, Bennett, & Kiecolt-Glaser in this volume). Drawing on both of these literatures, researchers need to make a more concerted attempt to understand how psychosocial risk and resilience factors and physiological processes together shape age differences in reactivity and resilience to daily stressors and the long-term consequences of stress (Piazza, Almeida, Dimitreva, & Klein, 2010; Segerstrom, 2007).

RECOMMENDATIONS FOR FUTURE DIRECTIONS

The focus of this chapter was on the role and effects of personal risk and resilience factors in the context of daily stress across the adult lifespan. Although the past 10 years or so have seen a good deal of progress—including both theoretical and empirical knowledge—in understanding stress and coping processes as they unfold in individuals' everyday lives, there are still many unanswered questions that need to be addressed in future research. Therefore, we will close this chapter with a section that focuses on recommendations for future directions in research and practice.

Investigating Multiple Risk and Resilience Factors and Their Potential Interactions

One of the major recommendations for future research is that investigators need to examine the effects and dynamic interactions of multiple risk and resilience

factors *simultaneously* rather than in isolation. With few exceptions (Diehl & Hay, 2010; Montpetit, Bergeman, Deboeck, Tiberio, & Boker, 2010), studies on risk and resilience factors in the context of daily stress have largely adopted a single-variable approach. That is, studies tend to focus on one aspect of risk or resilience at a time, without considering potential interactions with other variables of interest. For example, the effect of trait resilience in the context of daily stress was examined in one study (Ong, Zautra, & Reid, 2010) and the effect of negative affectivity was examined in another (Neupert, Mroczek, & Spiro, 2008). Although these studies made valuable contributions to the literature, they are limited in elucidating how resilience is expressed in the inter-action of multiple personal characteristics, and how multiple personal and con-textual features contribute to the successful recovery from the negative effects of daily stress (Zautra et al., 2010). Ideally, such a study would require following an age diverse group of adults over a lengthy period of time while attempting to sample the full universe of stressors they experience (i.e., daily stressors, chronic stressors, and any acute high-impact stressors, such as critical life events) as well as evaluating the multiple risk and resilience factors they may possess both at the individual level and within their wider social networks (i.e., social support and community-based social resources). Moreover, such a study would also combine measurement bursts (e.g., within and across days) within a long-term longitu-dinal framework (e.g., across months and years), thus permitting the modeling of the short-term effects of daily stressors and the modeling of the long-term processes of resilience and adaptation. Thus, future research needs to adopt a more *dynamic perspective* with regard to coping with daily stress and needs to examine how multiple risk and resilience factors interact with each other in the context of daily stress (Lee-Flynn, Pomaki, DeLongis, Biesanz, & Puterman, 2011). Moreover, risk and resilience factors representing *different and multiple levels* of human behavior (i.e., from the physiological to the psychological level) need to be studied to understand the complex connections between day-to-day processes and long-term outcomes, as well as the complex associations between physiological, psychological, and behavioral variables (Segerstrom, 2007).

Modeling the Dynamics of Coping With Daily Stress

To gain a better understanding of the dynamics of coping with daily stress, emphasis also needs to be put on three additional areas of research. First, more refined theoretical models and the application of more sophisticated statistical methods are needed to describe processes of *stress accumulation* (i.e., how stress may pile up over multiple days) and processes of *stress recovery*. So far, studies have focused on the effect of daily stress on affect, mood, or physical symptoms on the same day, or the lagged effect on the next day. However, to date, few

studies have considered the accumulating effect of stress on affect or other out-comes (for exceptions, see Bolger et al., 1989; Marco & Suls, 1993), and none have considered how different risk and resilience factors may contribute to this process either individually or jointly. For example, when a person experiences stress for 5 days in a row, how may the effects of the same or different stressors build up from Day 1 to Day 5? What does the individual's affect experience look like within and across those 5 days? Are the effects of the stressors that occurred on Day 1 diminished because the individual has to deal with new stressors on the next few days? Or does the effect of the stressors grow exponentially across the 5 stressful days? Does it make a difference whether the stressors arise from the same problem/life domain or whether they arise from situations in different life domains? All of these questions are currently insufficiently addressed and require more attention. Recently, studies have emerged that have used *dynamical systems modeling* to describe the process of stress recovery in real time (Bisconti, Bergeman, & Boker, 2004; Montpetit et al., 2010). Dynamical systems analysis techniques enable researchers to model (a) how adults' emotional states oscillate around their own overall trend and how they are amplified or dampened over time in response to daily stress (i.e., recover from daily stress), (b) how individual dif-ference variables (i.e., risk and protective factors) alter adults' recovery patterns in response to specific stressors and their overall trajectories of adaptation, and (c) how features of patterns of oscillations and trends are linked with outcomes (e.g., resilience or maladaptation). Thus, this analytical approach holds a great deal of promise for understanding processes of coping with daily stress and how personal risk and resilience factors may shape individuals' resilience and adaptation over time (Montpetit et al.). Further development in the application of dynamical systems modeling to the area of stress and coping research can also be applied to research on how the effects of stressors accumulate over time (i.e., stress pileup) and how individuals recover from stressor pileup.

Second, research on daily stressors has so far considered how protective factors may confer some resilience on adults as they cope with daily stress (e.g. Ong et al., 2006). However, as Zautra and colleagues (2010) noted, resilience may also be appropriately defined as an *outcome* of successful adaption to adver-sity. Resilience, therefore, may be seen as a dynamic process whereby resilience can be enhanced (or eroded) in both short- and long-term ways by a variety of stable and variable characteristics of the individual, their social network, their environment, and so forth. Within the context of daily stress, it is therefore essential to ask questions such as "to what extent might overall resilience be built through individuals' experiences with daily stress?" How do individuals become more resilient as they cope with adversity and gather experience on how to best cope with stressors? There is, for example, research suggesting that certain

individuals may experience posttraumatic growth from major life events, such as surviving cancer (Cordova, Cunningham, Carlson, & Andrykowski, 2001; Park, Mills-Baxter, & Fenster, 2005). Could exposure to and successful coping with daily stress perhaps have a similar effect (i.e., "steeling effect"; see Rutter, 2005) and contribute to the development of resilient behavior (see also Diehl, 1999).

At present, such questions remain mostly unanswered. Indeed, research on daily stress has focused on understanding the negative consequences of daily stress exposure and has clearly demonstrated that daily stress is negatively associated with emotional and physical well-being. Little research, however, has considered whether daily stressors—experienced in an amount that is not unrelenting or overwhelming to the individual—may be adaptive, perhaps by offering adults a chance to exercise their coping skills and develop a sense of mastery and self-efficacy (Bandura, 1997) within the context of stressors that are typically short-lived and of low-to-moderate intensity. At present, therefore, little is known about whether or how individuals may experience growth from daily stress, or from being exposed to certain types of daily stressors (e.g., stressors that are experienced as positive because they challenge a person's competence and sense of self). At the same time, empirical evidence suggests that daily stress is prevalent and plays an important role in health and psychological well-being (Almeida, 2005). Thus, there is good reason to speculate that under certain circumstances individuals with certain characteristics may learn and gain resilience from coping with daily stress.

Third, although space constraints prevent us from discussing in any detail the importance of considering physiological processes in stress (see the chapter by Fagundes, Gillie, Derry, Bennett & Kiecolt-Glaser in this volume), future research on risk and resilience factors in daily stress also needs to incorporate markers of the physiology of stress. Age is clearly associated with profound changes in adults' biological systems. Consequently, a full understanding of age differences and age-related changes in risk and resilience to stress necessitates that researchers consider how processes of physiological aging and stress reactivity influence one another across adulthood (Piazza et al., 2010).

Translating Findings From Basic Research Into Intervention Programs
Another challenge for future work is to apply findings from basic research studies to the development and implementation of translational intervention programs. That is, from an applied perspective, it is increasingly important to ask which findings may lend themselves to the translation into community-based intervention programs with the objective to prevent stress-related disorders and to enhance adults' resilience to the negative effects of daily stress. Some of the key questions that need to be addressed in this context are "Can resilient behavior

in the context of daily stress be taught to adults?" "What are the personal and contextual preconditions that facilitate adults' motivation to critically examine their existing coping strategies and to acquire more effective ones, if indicated?" "How can stress-related resilience in older adults be built and maintained in their communities?"

Whether such efforts of translational work are successful will, to some extent, depend on the view that researchers take regarding the concept of resilience. For example, researchers who view resilience as a trait assume implicitly that it is a relatively stable and enduring feature of the person and, hence, may not be easily modified. Such a view, therefore, also suggests that resilience-enhancing interventions may be best achieved through attempts to modify adults' environmental conditions. In contrast, the resilience-as-process approach implies that a person's resilience may be built and enhanced in ways that can benefit the individual across many domains of his or her life (Kent & Davis, 2010). Indeed, research on the effects of therapeutic interventions has shown that training in life skills and adaptive coping strategies have beneficial effects in individuals with psychopathologies (Martin-Joy & Vaillant, 2010; Kent & Davis, 2010). The next crucial step is to gain a better understanding of the feasibility and effectiveness of translational (therapeutic) interventions in nonclinical older adults.

Is There a Specific Ecology of Resilience in Late Life?

Finally, because of the increased uncertainties and vulnerabilities that adults experience in very late life (Baltes & Smith, 2003), researchers also need to address the potential threats to the maintenance of resilient behavior in late life. In the context of daily stress, there is emerging evidence that older adults report more health-related stressors than young and middle-aged adults (Hay & Diehl, 2010). Whether health-related stressors have a particular potential to undermine individuals' coping strategies and beliefs of control, however, is currently an open question and will require further investigation. On the surface and at first glance, it seems quite reasonable to assume that health-related stressors, especially if they are severe and chronic in nature, may take on a particular meaning for an individual and may therefore gain a particular status regarding threatening that person's resilience, both in terms of personal as well as social resources.

Similarly, little is currently known about how some of the *normative cognitive and interpersonal changes* (e.g., loss of family members and friends) that can be observed in very late life may undermine and threaten an individual's resilience. Thus, the overall question that needs to be addressed in the future is whether the specific conditions of very late life (i.e., the "Fourth Age") create a specific ecology that is not friendly to older adults with regard to maintaining the behaviors and resources necessary for resilience.

CONCLUDING REMARKS

The concept of resilience has received increasing attention in the adult development and aging literature (Greve & Staudinger, 2006; Reich, Zautra, & Hall, 2010; Ryff et al., 1998). This increased attention serves as an acknowledgment that adults possess considerable reserve capacity that they can bring to bear "when life gets tough" and challenges their adaptive capacity and well-being. In fact, several authors have argued that middle-aged and older adults may be particularly well suited to study processes of risk and resilience (Ong & Bergeman, 2004). Although, in principle, we agree with these general arguments, the review of the literature provided in this chapter also challenges us to reflect on the concepts of risk and resilience in innovative and creative ways.

For example, we would argue that research now clearly suggests that there is no universal generalization that can be made regarding whether chronological age, in and of itself, confers greater vulnerability or resilience on adults. Indeed, we would like to argue that researchers should move away from the relatively simple question of whether age is associated with greater risk or resilience among adults in the context of daily stress, but rather ask *when and under what conditions* is age associated with *greater vulnerability* to daily stress and *when and under what conditions* is age associated with *greater resilience* to daily stress. Age differences in reactivity to daily stress are clearly embedded within a complex system of factors—structural, individual, and situational—that influence stress reactivity and stress recovery in several ways. This complexity should not be taken to mean that stress reactivity and recovery cannot be charted or understood. Researchers, however, will need to approach this complexity with a great deal of theoretical, methodological, and statistical rigor to move our understanding of the importance of age in shaping risk and resilience to daily stress forward.

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CHAPTER 14

Resilience Across the Life Span

Richard M. Lerner, Michelle B. Weiner, Miriam R. Arbeit, Paul A. Chase, Jennifer P. Agans, Kristina L. Schmid, and Amy E. A. Warren

ABSTRACT

This chapter discusses the concept of resilience from a life span perspective informed by relational developmental systems theory. Resilience involves mutually beneficial (adaptive) relations between characteristics of individuals (e.g., their self-regulation behaviors) and features of the ecology (e.g., resources promoting healthy development); these links may be represented as individual $\longleftrightarrow$ context relations, and they involve adjustment in the context of challenges or maintenance of appropriate functioning in the face of variations in the resources needed to achieve health. Resilience, then, is an attribute of positive human development (PHD) achieved through adaptive individual $\longleftrightarrow$ context relations (termed adaptive "developmental regulations"). We review research across the life span that speaks to the use of this conception of resilience for understanding the contributions individuals make to their own positive development and to the maintenance or perpetuation of PHD-supportive assets of their ecologies. Directions for further research and for applications aimed at promoting PHD are discussed.

People are not resilient. Resilience is also not a functional feature of the ecology of human development (e.g., as may be represented by the concept of "protective factors"). Rather, resilience is a concept denoting that the *relationship* between a person and the person's ecology has adaptive significance, that is, the relationship involves a fit between characteristics of the individual and features of his or her ecology that reflects either adjustment (change) in the face of altered or new

environmental threats, challenges, or "processes," or constancy or maintenance of appropriate or healthy functioning in the face of environmental variations in the resources needed for appropriate or healthy functioning. As such, the person-context relationship summarized by the term "resilience" reflects individual well-being at a given point in time, and thriving across time, in the face of features within the ecological context that challenge adaptation. In turn, this relationship also implies that, for the ecology or context, there are actions that could maintain or further the quality of its structure (e.g., the family, educational, or health care systems) or its function in the service of supporting healthy human behavior and development (e.g., parenting that reflects warmth and appropriate monitoring; low student–teacher ratios involving engaged students and high-quality institutions; and access to primary, secondary, and tertiary care under normative and emergency conditions, respectively).

Resilience is, then, a dynamic attribute of a relationship between an individual and his or her multilevel and integrated (relational) developmental system. We represent this mutually influential relation between an individual and the context as individual ←→ context relations. In our view, the process of individual ←→ context relations involved in resilience is *not* distinct from the relations involved in human functioning in general. What is distinct, however, is that exchanges involving resilience are located at a portion of a theoretical probability distribution of these relations that may be described as involving nonnormative levels of risk or high levels of adversity (see Figure 14.1). In short, the process
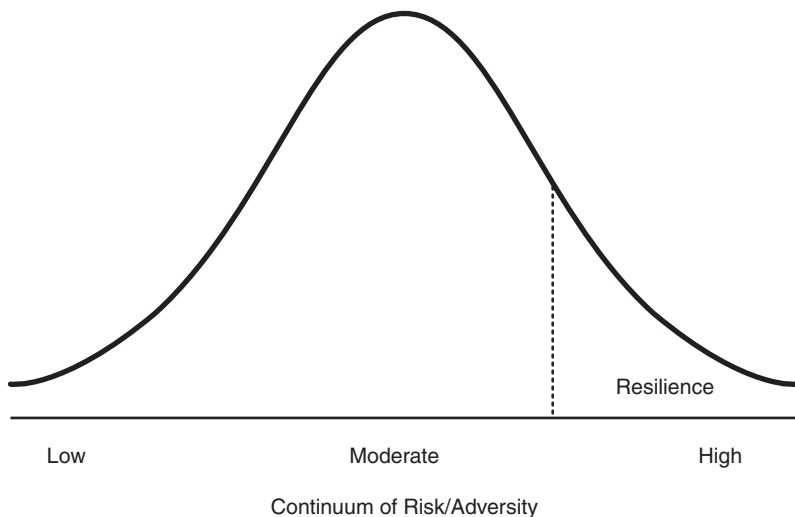
FIGURE 14.1 Theoretical probability distribution of instances of adaptive individual ←→ context relations in the face of differing levels of risk and adversity.

we study in seeking to understand resilience differs from the other instances of individual ←→ context relations only in regard to location in this distribution.[1]

Accordingly, because resilience is not a characteristic of either component of the individual ←→ context relationship (i.e., resilience is not an attribute of the person or of the context), it should be studied within a nonreductionist theoretical frame and through the use of change-sensitive and multilevel (and hence multivariate) developmental methods including longitudinal designs that involve measurement models that are change and diversity sensitive (e.g., Collins, 2006; Lerner, Schwartz, & Phelps, 2009; Little, Card, Preacher, & McConnell, 2009). To approach the conceptualization, study, and measurement of resilience in this manner entails the use of contemporary relational developmental systems theoretical models of human development, which—today—are at the cutting-edge of developmental science (Overton, 2006, 2010).

Indeed, the scientific study of resilience within the developmental system is an excellent sample case of the utility of such theoretical models as frames with which to elucidate the basic relational processes of life span human development and, as well, for the application of developmental science to promote positive human development (PHD; Lerner, 2006b; Masten, 2009; Masten & Obradovic, 2006; Wachs, 2006). Accordingly, to understand the nature and significance of basic and applied facets of life span developmental science to the study of resilience, it is useful to specify the features of current relational developmental systems models. This discussion will afford specification of the dynamic, relational character of resilience.

THE DEVELOPING CONTEXT OF THE CONCEPT OF DEVELOPMENT

Developmental psychology has been transformed into developmental science. As richly illustrated by the chapters across the four volumes of the *Handbook of Child Psychology: Theoretical Models of Human Development*, 6th edition (Damon & Lerner, 2006), as well as in other major publications in the field (e.g., Bornstein & Lamb, 2010; Lamb & Freund, 2010; Overton, 2010), the study of human development has evolved from being either a psychogenic or a biogenic approach to conceptualizing and studying the life span to a multidisciplinary approach that seeks to integrate variables from biological through cultural and historical levels of organization into a synthetic, coactional system (Elder, 1998; Gottlieb, 1997, 1998; Hood, Halpern, Greenberg, & Lerner, 2010). As such, reductionist accounts of development that adhere to a Cartesian dualism and that pull apart facets of the integrated developmental system are rejected by proponents of relational developmental systems theorists (Mistry & Wu, 2010; Overton, 2010).

Such reductionist views typically raise as key developmental issues such split formulations as nature versus nurture, continuity versus discontinuity, or stability versus instability.

We eschew such thinking. In turn, we favor post, postmodern, relational models stressing the integration of different levels of organization as a means to understand and to study life span human development (Overton, 2010). Thus, as exemplified by the focus of inquiry in the contemporary study of resilience, the conceptual emphasis of relational developmental systems theory is placed on the nature of mutually influential individual $\longleftrightarrow$ context relations, that is, the focus is on the "rules," the processes that govern exchanges between individuals and their contexts. Brandtstädter (1998) terms these relations "developmental regulations" and notes that where developmental regulations involve mutually beneficial individual $\longleftrightarrow$ context relations, they constitute *adaptive* developmental regulations. As suggested earlier, we believe that such developmental regulations are the essence of resilience. Table 14.1 summarizes the set of defining features of relational developmental systems models.

The combined ideas presented in the table suggest that the possibility of adaptive developmental relations between individuals and their contexts and the potential plasticity of human development that is a defining feature of ontogenetic change within the relational developmental system are distinctive features of this approach to human development. As well, the core features of relational developmental systems models provide a rationale for making a set of methodological choices that differ in design, measurement, sampling, and data analytic techniques from selections made by researchers using split or reductionist approaches to developmental science. Moreover, the emphasis on how the individual acts on the context to contribute to the plastic relations with it fosters an interest in person-centered (as compared to variable-centered) approaches to the study of human development.

Furthermore, the array of individual and contextual variables involved in these relations constitutes a virtually open set. Estimates are that the odds of two genetically identical genotypes arising in the human population is about 1 in 6.3 billion, and each of these potential human genotypes may be coupled across life with an even larger number of life course trajectories of social experiences (Hirsch, 2004). Thus, the number of human phenotypes that can exist is fundamentally equivalent to being infinite, and the diversity of development becomes a prime, substantive focus for developmental science.

This diversity may be approached with the expectation that positive changes can be promoted across all instances of variation, as a consequence of health-supportive alignments between people and settings. With this stance, diversity becomes the necessary subject of inquiry in developmental science and

TABLE 14.1
Defining Features of Relational Developmental Systems Theories

A Relational Metamodel

Predicated on a post, postmodern philosophical perspective that transcends Cartesian dualism, relational developmental systems theories are framed by a relational metamodel for human development. There is, then, a rejection of all splits between components of the ecology of human development, for example, between nature- and nurture-based variables, between continuity and discontinuity, or between stability and instability. Systemic syntheses or integrations replace dichotomizations or other reductionist partitions of the developmental system.

The integration of levels of organization

Relational thinking and the rejection of Cartesian splits is associated with the idea that all levels of organization within the ecology of human development are integrated, or fused. These levels range from the biological and physiological through the cultural and historical.

Developmental regulation across ontogeny involves mutually influential individual ←—→ context relations

As a consequence of the integration of levels, the regulation of development occurs through mutually influential connections among all levels of the developmental system, ranging from genes and cell physiology through individual mental and behavioral functioning to society, culture, the designed and natural ecology, and—ultimately—history. These mutually influential relations may be represented generically as Level 1 ←—→ Level 2 (e.g., Family ←—→ Community) and, in the case of ontogeny may be represented as individual ←—→ context.

Integrated actions, individual ←—→ context relations, are the basic unit of analysis within human development

The character of developmental regulation means that the integration of actions—of the individual on the context and of the multiple levels of the context on the individual (individual ←—→ context)—constitute the fundamental unit of analysis in the study of the basic process of human development.

Temporality and plasticity in human development

As a consequence of the fusion of the historical level of analysis—and therefore temporality—within the levels of organization comprising the ecology of human development, the developmental system is characterized by the potential for systematic change, by plasticity. Observed trajectories of intraindividual change may vary across time and place as a consequence of such plasticity.

(Continued)

TABLE 14.1

Defining Features of Relational Developmental Systems Theories (Continued)

A Relational Metamodel

Plasticity is relative

Developmental regulation may both facilitate and constrain opportunities for change. Thus, change in individual ←→ context relations is not limitless, and the magnitude of plasticity (the probability of change in a developmental trajectory occurring in relation to variation in contextual conditions) may vary across the life span and history. Nevertheless, the potential for plasticity at both individual and contextual levels constitutes a fundamental strength of all humans' development.

Intraindividual change, interindividual differences in intraindividual change, and the fundamental substantive significance of diversity

The combinations of variables across the integrated levels of organization within the developmental system that provide the basis of the developmental process will vary at least in part across individuals and groups. This diversity is systematic and lawfully produced by idiographic, group differential, and generic (nomothetic) phenomena. The range of interindividual differences in intraindividual change observed at any point in time is evidence of the plasticity of the developmental system and makes the study of diversity of fundamental substantive significance for the description, explanation, and optimization of human development.

Optimism, the application of developmental science, and the promotion of positive human development

The potential for and instantiations of plasticity legitimate an optimistic and proactive search for characteristics of individuals and of their ecologies that, together, can be arrayed to promote positive human development across life. Through the application of developmental science in planned attempts (i.e., interventions) to enhance (e.g., through social policies or community-based programs) the character of humans' developmental trajectories, the promotion of positive human development may be achieved by aligning the strengths (operationalized as the potentials for positive change) of individuals and contexts.

Multidisciplinarity and the need for change-sensitive methodologies

The integrated levels of organization comprising the developmental system require collaborative analyses by scholars from multiple disciplines. Multidisciplinary knowledge and, ideally, interdisciplinary knowledge is sought. The temporal embeddedness and resulting plasticity of the developmental system require that research designs, methods of observation and measurement, and procedures for data analysis be change-sensitive and able to integrate trajectories of change at multiple levels of analysis.

Source: Adapted from Lerner (2006a).

in the study of resilience. That is, to understand the bases of and, in turn, to promote individual ←→ context relations that may be characterized as resilient—which are relations reflecting the maintenance or enhancement of links that are mutually beneficial[2] to individuals and context—scholars must ask a complex, multipart question. They must ascertain *what fundamental attributes of individuals* (e.g., what features of cognition, motivation, emotion, ability, physiology, or temperament); among *individuals of what status attributes* (e.g., people at what portions of the life span, and of what sex, race, ethnic, religious, geographic location) characteristics; in relation to *what characteristics of the context* (e.g., under what conditions of the family, the neighborhood, social policy, the economy, or history); are likely to be associated with *what facets of adaptive functioning* (e.g., maintenance of health and of active, positive contributions to family, community, and civil society)?

Addressing such a set of interrelated questions requires, at the least, a systematic program of research. Nevertheless, the linkage between the ideas of plasticity and diversity that gave rise to this set of questions provides a basis for extending developmental systems thinking to form an optimistic view of the potential to apply developmental science to promote person ←→ context exchanges that may reflect and/or promote health and positive, successful development, in other words, that may reflect resilience. Accordingly, employing a relational developmental systems frame for the application of developmental science affords a basis for forging a new, strength-based vision of and vocabulary for the nature of human development and for specifying the set of individual and ecological conditions that, together, may reflect resilience. In short, the plasticity-diversity linkage within relational developmental systems theory and method provides the basis for the formulation of a PHD perspective, one in which the potential for human resilience is ubiquitous across the life span, albeit within the context of changing developmental capacities, such as the changing ratio of gains and losses that characterizes the prototypic trajectory across the life span (Baltes, Lindenberger, & Staudinger, 2006; Lerner, 2011).

KEY FACETS OF A POSITIVE HUMAN DEVELOPMENT PERSPECTIVE

The key feature of a PHD perspective predicated on developmental systems theory is an emphasis on individual strengths (e.g., the possession of relative plasticity across the life span) and the presence of resources within the individual's ecology (termed "developmental assets"; Benson, Scales, Hamilton, & Sesma, 2006; Benson, Scales, & Syvertsen, 2011) that, when coupled across ontogeny with the strengths of an individual, foster thriving (positive and healthy functioning

across life). Given the ubiquity of relative plasticity across the life span (Lerner, 1984), the PHD perspective posits that all individuals have the potential to develop more positively by enhancing adaptive (mutually beneficial) developmental regulations. Resilience is in fact adaptive developmental regulation. From a relational developmental systems perspective, all people have the potential to be in relations with their context that reflect resilience. The goal of developmental science is, then, to identify the individual and ecological conditions that reflect resilience and to then apply this information in ways that optimize the chances that diverse people will manifest these adaptive developmental regulations.

As implied in our earlier discussion of our definition of resilience, of developmental systems theory, and of adaptive developmental regulations, such mutually beneficial person ←→ context relations occur when the strengths of individuals are aligned with those resources (the developmental assets) present in the ecology of human development that maximize the probability that the individual strengths are linked to instances of positive functioning or healthy developmental outcomes. A key idea within the PHD perspective is that individuals are embedded in contexts (e.g., families, schools, communities) that possess such assets, and there is abundant research supporting this idea (e.g., see Benson et al., 2006, 2011, for reviews).

For instance, Theokas and Lerner (2006) have identified four types of ecological developmental assets. Other individuals constitute the ecological asset most likely to be linked to PHD (Theokas & Lerner, 2006). Although peers of children or adolescents represent important instances of the individuals that may serve as resources for PHD (Brown & Larson, 2009), across the life span, the social support provided by adults constitute a major source of such developmental assets (Antonucci, Fiori, Birditt, & Jackey, 2010). For example, authoritative parents, who provide high quantities of high-quality time with their children (e.g., involving high monitoring and warmth; Bebiroğlu, 2009), may foster thriving among them (Laursen & Collins, 2009). In addition, adults may serve as effective mentors of children and adolescents, particularly when they are competent, committed, and continuously present (for at least 1 year; Rhodes, 2002). Teachers or coaches can also enhance, of course, the academic and extracurricular behavior and development of students (Elmore, 2009), and spiritual leaders or guides can promote senses of mattering and meaning in the lives of people of all ages (Oman, Flinders, & Thoresen, 2008). Moreover, adult children, or individuals in various health or helping professions (e.g., home visitor nurses), may also be assets supporting the well-being of aged parents/adults or of infirm individuals of any age (Antonucci et al., 2010).

Three additional developmental asset categories were identified by Theokas and Lerner (2006). They pointed to institutions (e.g., libraries, parks, or senior

citizen community-based programs), to opportunities for interpersonal inter-action and collaboration (e.g., as in foster grandparenting programs or in pro-grams involving retirees volunteering to teach in elementary through high school classes), and to accessibility (e.g., local out-of-school-time programs for youth, or the availability of transportation for aged citizens to reach health care or rec-reational activities or facilities).

Accordingly, within the PHD perspective as well as within relational devel-opmental systems models that give rise to this view of human development, the ubiquity of both human strengths and contextual developmental assets means that both individuals and their ecologies are active contributors to the developmental process and to the possible promotion of healthy human development. Resilience is likely to occur when individuals possess the capacities or skills to align them-selves with developmental assets in the face of individual $\longleftrightarrow$ context relations that vary from normative or expected exchanges between the person and his or her ecology, and that may be marked by atypical levels of risk or high levels of adver-sity. Considerable research has identified the individual contributors to adaptive individual $\longleftrightarrow$ context relations that enhance the likelihood of resilience. This research pertains to the topic of self-regulation (e.g., Geldhof, Little, & Colombo, 2010; Lerner et al., in press; McClelland, Ponitz, Messersmith, & Tominey, 2010).

THE ROLE OF SELF-REGULATION IN RESILIENCE

Across the life span, individuals live in complex physical, social, cultural, and historical contexts. To be resilient—indeed to thrive (acting in manners that optimize one's chances for a life marked by health and positive exchanges with one's world)—individuals make decisions about how to act in ways that meet personal needs and environmental demands (Brandtstädter, 2006; Lewontin, 2000). In other words, to contribute to the individual component of adaptive individual $\longleftrightarrow$ context relations, individuals must act in ways that support their own healthy functioning and, as well, are of benefit to their context. Accordingly, across the life span, individuals need to accomplish several adaptive tasks involv-ing self and context. First, they must establish and then build knowledge about the evolving requirements for personal adjustment, given their particular char-acteristics of physiological, physical, psychological, and behavioral individuality; they must learn also the demands for adaptation present in their specific eco-logical niche. Second, a foundation must be established and then enhanced, for attaining the cognitive and behavioral skill sets needed for setting goals necessary for survival and, even more, for thriving.

To accomplish these ends, strategic thinking and executive functioning need to be coupled with the actions required for turning life goals into reality,

that is, into successful personal adjustment and ecological adaptation (Baltes, 1997; Baltes et al., 2006). These adaptive tasks—developing links between thinking and action in the service of adaptation—must occur in the face of a changing world. During particular life periods, these ecological changes may necessitate a rapidly evolving developmental trajectory. Such trajectories involve changing neurological, cognitive, emotional, somatic, and behavioral characteristics that evolve in relation to normative and often nonnormative changes in key contexts of life, including families, peer groups, schools, and communities (Bronfenbrenner, 1979, 2005). In short, the foundational and developmental knowledge acquisition and skill attainment required for thriving across the life span and the embeddedness of these requirements in multiple and complex trajectories across the developmental system are enormous (and arguably ontogenetically distinct) across successive portions of the life span.

Organismic and Intentional Self-Regulation

Developmental science has recognized the theoretical importance across life of establishing and maintaining adaptive developmental regulations for individual thriving and, as well, for understanding the contribution of individuals to the quality of their contexts. For instance, Posner and Rothbart (2000) have stated that "understanding self-regulation is the single most crucial goal for advancing an understanding of development" (p. 427). Not surprisingly, then, in the last decade, there has been a focus in theory and research on self-regulation, that is, on the ways in which the developing physiological, psychological, and behavioral attributes of individuals coalesce to provide the means for them to actively contribute to mutually beneficial individual ←→ context relations. Within this literature, self-regulation is a term that encompasses multiple forms of functioning, ranging from physiological functions to complicated, intentional thought processes. Self-regulation also involves actions designed to either enact strategies for attaining the aims of (goals for) selected transactions with the context or for compensating effectively when goals are blocked or initial actions fail (Baltes, 1997; Geldhof et al., 2010; Gestsdóttir & Lerner, 2008; McClelland et al., 2010).

As such, self-regulation pertains to all aspects of adaptive developmental regulation, as individuals alter their behaviors—as well as thoughts, attention, and emotions—to react to different contexts and modulate their reactions to and actions aimed at influencing their contexts (Shonkoff & Phillips, 2000). In sum, then, *self-regulation* may be defined as "the ability to flexibly activate, monitor, inhibit, persevere and/or adapt one's behavior, attention, emotions and cognitive strategies in response to direction from internal cues, environmental

stimuli, and feedback from others, in an attempt to attain personally-relevant goals" (Moilanen, 2007, p. 835).

Clearly, these conceptions of self-regulation encompass two integrated but nevertheless distinguishable processes: ones involving either primarily physiological or organismic processes, and ones involving primarily intentional processes. Gestsdóttir and Lerner (2008) have explained that intentional self-regulations are contextualized actions that are actively aimed toward harmonizing demands and resources in the context with personal goals in order to attain better functioning and to enhance self-development. Intentional self-regulation is characterized by goal-directed behaviors. Processes of intentional self-regulation are more readily available to consciousness than processes and structures of organismic regulation, which are broad, ontogenetically consistent (i.e., relatively continuous) attributes of a person that involve biologically-based physiological structures and functions that contribute to the relationship an individual has with the environment. Such organismic characteristics (e.g., hypothalamic control of body temperature, circadian rhythms, pubertal timing, and temperamental attributes such as threshold of response or quality of mood) are under no or limited control of the person and do not involve intentional efforts of the person to regulate his or her individual ←→ context exchanges.

Both organismic and intentional self-regulation processes must be integrated across life for adaptive developmental regulations to exist and for the developing person to thrive, not only within particular developmental periods but, as well, across the transitions into and out of successive portions of ontogeny. The development of and interindividual differences in organismic self-regulation influence the individual's contributions to adaptive individual ←→ context relations, both directly and in connection to intentional self-regulation (a point to which we will return later in this chapter). Moreover, across the life span, changes in the nature of intentional self-regulation are arguably the major means through which the active individual contributes to the adaptive developmental regulations that mark resilience.

Baltes, Freund, and colleagues (e.g., Baltes, 1997; Baltes & Baltes, 1990; Freund & Baltes, 2002; Freund, Li, & Baltes, 1999) agree. These scholars have found that, across the span of adulthood, individuals' capacities for intentional self-regulation are important, indeed key, strengths enabling individuals to access the resources needed to optimize the chances that the positive goals they select are attained *or* to compensate effectively when optimization skills (such as resource recruitment, executive functioning, or strategic tracking) fail or when goal-oriented behaviors are blocked. Scholars whose work is focused on other portions of the life span also place a prominent emphasis on the importance for adaptive developmental regulations of processes of intentional self-regulation.

For instance, Bodrova, Leong, and Akhutina (2011) focus on the role of executive functions (EFs) in young children's meeting the learning demands of preschool educational contexts. Bodrova et al. (2011) report data that point to the importance of such instances of intentional self-regulation for productive individual ←→ school context achievement (learning). They discuss the potential significance of instructional interventions for strengthening the development of EF in typically developing children and/or in preventing possible delays in the development of children with various risk factors. Similarly, McClelland and Ponitz (2011) note that self-regulation has emerged during early and middle childhood as a key construct in children's healthy and adaptive development. Consistent with the approach taken in this chapter, McClelland and Ponitz situate intentional self-regulation in a relational developmental systems theoretical context and, as such, they explain that self-regulation is a dynamic, multilevel, and interactive process. They use this theoretical frame for identifying the components of self-regulation (flexible attention, working memory, and inhibitory control) that are most important for early school success. They present evidence supporting substantive links between aspects of self-regulation and academic achievement in young children.

Geldhof and Little (2011) extend the early life focus of Bodrova, et al. (2011) and of McClelland and Ponitz (2011) by underscoring the idea that self-regulation represents a core aspect of human functioning that influences positive development across the life span. Consistent with the ideas of Baltes (1997), Freund and Baltes (2002), Brandtstädter (1998, 2006), and Heckhausen (1999), Geldhof and Little discuss self-regulation within the context of what they term an action-control model. They regard such a model as a fundamental facet of self-regulation during the first two decades of life, in that it links cognitions (beliefs) about the sources of control over behavior with the actions of individuals. In particular, they discuss the development of action-control beliefs. They note that there are at least several action-control beliefs involved in the relationships among agents (self or others), means, and outcomes/ends, and that research has primarily focused on means-ends, agency, and control-expectancy beliefs. As such, they focus on action-control beliefs and their links to positive development. They explain that action-control beliefs are related to physiological well-being, and thus point to the interrelation between organismic and intentional facets of self-regulation. They provide ideas about how the integration of the action-control model with other theories of self-regulation can inform understanding of self-regulation processes across the life span.

Data derived from the 4-H Study of Positive Youth Development (e.g., Lerner et al., 2005, 2009, 2010) provide information about development during the second decade of life that are consistent with the views of Geldhof and

Little (2011). For instance, Gestsdóttir, Urban, Bowers, Lerner, and Lerner (2011) discuss the development of intentional self-regulation in adolescence and the implications of such development for thriving. Indexing intentional self-regulation through the Freund and Baltes (2002) selection (S), optimization (O), and compensation (C; SOC) measure, they summarize the results of several studies that have examined the development of the SOC processes among youth in Grades 5–10. They point to links among intentional self-regulation, ecological developmental assets, and thriving in adolescence but note, as well, the need for more systematic examination of the longitudinal, bidirectional relationships among individual strengths and contextual assets in relation to outcomes in adolescence and adulthood. To illustrate, Urban, Lewin-Bizan, and Lerner (2010) found that positive development in adolescence is more likely when these SOC skills are aligned with ecological developmental resources associated with community-based, youth development programs.

As already suggested by our pointing earlier to the research of Baltes, Freund, and colleagues, arguably, the richest and most innovative research program to date that exemplifies the role of intentional self-regulation in individual ←→ context relations reflecting resilience has been conducted by Baltes and his colleagues in regard to the assessment of the individual and contextual bases of successful aging (e.g., Baltes et al., 2006). More than a quarter century of research (e.g., in regard to the Berlin Study of Aging; Baltes & Mayer, 2001) has demonstrated convincingly that gains in psychosocial functioning, and not just losses, can characterize the development of people into even the 10th and 11th decades of life. Consistent with the SOC approach to intentional self-regulation, Baltes and colleagues indicate that, among both the old and the very old, high senses of self-control over positive (desired) goals can be maintained even in the face of declines in functional capacity (Baltes et al., 2006). Moreover, in regard to discussions on the assimilative and accommodative conceptions of intentional self-regulation forwarded by Brandtstädter and colleagues (e.g., Brandtstädter, 1998, 1999; Brandtstädter & Renner, 1990), Baltes and colleagues note that:

> In comparison to younger adults, older adults have been found to demonstrate an accommodative coping style in the face of adversity or failure; that is, older adults were more flexible and better able to adjust their strivings to changed circumstances than were younger adults. (Baltes et al., 2006, p. 636)

In other words, consistent with the presence of relative plasticity across the life span, and thus the ability to change the self to enhance fit with the demands of the context, old and very old adults show evidence of resilience. Moreover, they show particular approaches to resilience (accommodative ones) that enhance the probability they will fit with the individual changes they experience (loss of

functional ability) and the particular set of ecological challenges attendant at their time of life. In this regard, Heckhausen (1999; Heckhausen, 2002) reports that aged adults show a shift from primary control strategies to secondary control strategies in the service of maintaining resilience in the face of the challenges of aging.

The presence of individual ⟵⟶ context relations reflecting resilience, such as flexibility or accommodative behaviors, is related to PHD among aged adults; for instance, such functioning covaries with high levels of well-being and lower levels of depression (Baltes et al., 2006; Staudinger & Fleeson, 1996). Accordingly, a key to the existence of PHD across the life span may be developmentally and contextually appropriate manifestations of the intentional self-regulation characteristics of SOC, of the appropriate deployment of approaches to action such as tenacious goal pursuit (an assimilative characteristic) or of flexible goal adjustment (an accommodative characteristic; Brandtstädter, 1998, 1999), or the primary control or secondary control of outcomes (Heckhausen, 1999, 2000). Accordingly, we agree with Baltes and colleagues (2006) that

> When orchestrating the optimization of development by processes such as selection and compensation, the appraisal of resources is of central importance. Questions such as how to evolve a goal structure and the associated goal-relevant means and motivational investment strategies, how to deal with selection-related disengagements from other possible goals, when to accept a loss and re-orient one's life, and when to still strive harder because current behavior is not yet employed to its fullest capability become crucial in composing life development. (p. 643)

Maniar and Zaff (2011) extend the ideas of Baltes, et al. (2006) regarding the contributions of intentional self-regulation in adaptive individual ⟵⟶ context relations reflecting resilience. They point to a life span approach to resilience by proposing that the role of intentional self-regulation processes should be studied across transitions from childhood through adulthood. They suggest that such scholarship should include assessment of the ways that intentional self-regulation skills are part of resilience in the face of challenges found in contextual settings such as the family, community, and the broader institutions of society, including the health system.

In short, there is a growing body of scholarship that reflects the theoretical and empirical use across the life span of a relational individual ⟵⟶ context approach to resilience, especially one wherein the individual's contribution to this relational process involves the enactment of the cognitive, emotional, and behavioral facets of intentional self-regulation. However, to more fully instantiate this approach to the study of resilience across the life span, especially as

it is manifested within and across transitions to successive portions of ontogeny and in relation to the key contexts of human development (Maniar & Zaff, 2011), several key conceptual and methodological issues will need to be addressed.

PROBLEMATICS IN THE STUDY OF RESILIENCE ACROSS THE LIFE SPAN

From a relational developmental systems perspective (Overton, 2010), adaptive individual ←→ context relations constitute across life the fundamental reflection of resilience. As we have emphasized, resilience exists when developmental regulations involve mutually beneficial actions of the individual on the context and actions of the context on individuals in relation to nonnormative levels of risk or high levels of adversity. We have argued that the cognitive, emotional, and behavioral attributes or skill sets that are involved in intentional self-regulation reflect the fundamental features of the individual's actions that are pertinent to resilience. In turn, when the provision of developmental assets by the ecology of human development (i.e., resources provided by people or societal institutions or social structures) are secured by individuals using intentional self-regulation skills to attain these assets, then individuals thrive. As such, they are apt to act to maintain the healthy or positive structure, function, and integrity of these developmental assets. Figure 14.2 presents an illustration of this relational, developmental systems conception of resilience.

However, such integration of actions between individuals and their ecologies, while ubiquitous across ontogeny in signifying resilience, may nevertheless undergo developmental transitions and transformations. That is, we may ask what facets of the system of relations depicted in Figure 14.2 show quantitative and/or qualitative continuity and what facets show quantitative and/or qualitative discontinuity. We would expect, for instance, that both organismic and intentional self-regulation show developmental variation (intraindividual change) across ontogeny. Thus, the nature of the interrelation between these two fundamental facets of self-regulation should change as well. Moreover, completing this link between organismic and individual self-regulation is the likelihood that the content of intentional self-regulation needs to change as the person undergoes normative development from infancy through adulthood. For instance, such developmental change will occur as different facets of development emerge, as the balance between developmental gains and losses alters, and as the resources needed from the context for positive human development to be instantiated varies in relation to the different developmental tasks of successive portions of ontogeny.
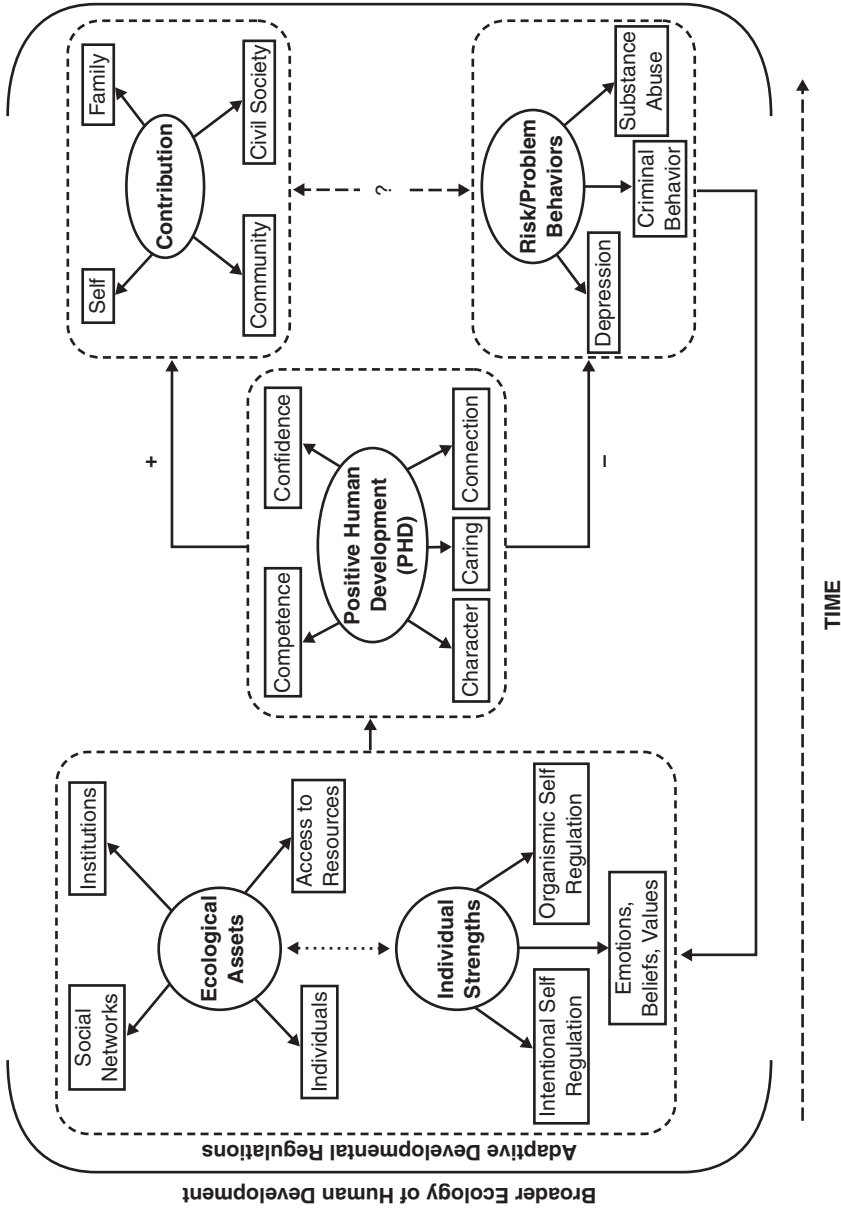
FIGURE 14.2 A relational, developmental systems model of the individual ←→ context relations involved in resilience.

Similarly, both the structure of intentional self-regulation and of ecological developmental assets may vary across normative developmental changes. For instance, Gestsdóttir and Lerner (2007) and Zimmerman, Phelps, and Lerner (2007) find that the intentional self-regulation skills operationalized within the SOC model exist in a global and undifferentiated form in the early portion of adolescence (Grades 5–7). Gestsdóttir et al. (2009) found that it is not until about Grade 10 that there is evidence for the presence of the adultlike, tripartite structure of SOC (e.g., as identified by Freund & Baltes, 2002). In addition, there is evidence that loss-based selection, identified among adult samples (Freund & Baltes, 2002), is present also in the intentional self-regulation structure of Grade 10 youth (Gestsdóttir et al., 2009).

Are there different structures of ecological developmental assets that covary along with such developmental changes in intentional self-regulation structure? No research exists regarding this question of developmental transformation. Similarly, would answers to this question vary if research were focused on infancy, on childhood, on adolescence, or on adulthood? Would answers vary if the focus were on the transitions from one to another of these developmental periods? Would the fundamental sequence of the linkages across life between intentional self-regulation and developmental assets vary in relation to inter-individual differences in intraindividual changes in organismic self-regulation? Again, no research exists to answer these questions.

In addition, how do nonnormative developmental changes or nonnormative historical events interrelate with normative individual and ecological transformations and transitions? Do such individual and ecological variations alter the content or structure of intentional self-regulation and/or ecological assets and, in so doing, constitute a different array of adaptive challenges that, in essence, make the nature of resilience qualitatively or quantitatively different? Moreover, do answers to these questions vary regarding the ecological niches within which individuals are interacting? We would expect so. Successful individual ←→ context relations within one's family of origin may involve different facets of intentional self-regulation and of organismic self-regulation (e.g., involving "difficult" temperament styles; Chess & Thomas, 1999). In addition, different facets of intentional self-regulation may be most salient when individuals engage with different types of ecological resources in preschool versus in high school, in the family of origin versus a family constituted by one's marriage and/or child bearing and rearing, or in the playground versus in the work place. Once again, research remains to be conducted to address such nuanced questions.

As such research is undertaken, we believe that issues of measurement are paramount. Several interrelated problems exist here. First, there is a tripartite measurement issue involved in the present formulation of resilience. That

is, research must develop psychometrically sound indices of the person, of the context and, in particular, of the person-context relation. Measuring any one of these three foci of inquiry is difficult enough; measurement of all three of these targets of assessment in an integrated way seems particularly challenging, especially given the complicated and evolving methodological issues involved in relational, fit, or difference scores (e.g., Baltes, Reese, & Nesselroade, 1977; Chiou & Spreng, 1996; Cronbach & Furby, 1970; Singer and Willett, 2003; von Eye, 1982).

In addition, there exist issues of measurement equivalence, both across conventional demographic categories (age, race, sex, religion, and culture) and across these diverse ecological niches to which we have just pointed. Moreover, measurement in normative settings may not be the same as measurement in the face of nonnormative situations—such as wars or natural disasters. Nonnormative settings may transform qualitatively or structurally the requirements that exist for the adaptive individual ←→ context relations reflecting resilience to be identified.

Furthermore, as the sort of research to which we are pointing is pursued, these issues of measurement may be expected to be complicated further by the fact that, as is the case in all facets of human behavior and development, some of the variance in resilience will involve nomothetic, group differential, or idiographic features of human functioning (Kluckhohn & Murray, 1948). For instance, nomothetic characteristics that may play a role in resilience may involve brain structures including the amygdala, the sympathetic and the parasympathetic systems, and the endocrine system. Group differential components of human functioning may be marked by the demographic variables we noted previously or may be reflected by variation in the social capital available to some social groups such as religious denominations, but not to others (Ebstyne King & Furrow, 2004; Putnam, 1995), or by the institutions of civil society present in some nations, but not others (Zaff, Kawashima-Ginsberg, & Lin, 2011). Idiographic features may be illustrated by the specific sets of organismic and intentional self-regulatory processes possessed by a person, for instance, particular temperamental attributes (e.g., easy, difficult, or slow-to-warm-up characteristics of temperament; Chess & Thomas, 1999) or the attributes of intentional self-regulation (e.g., elective selection, loss-based selection, optimization, compensation; Baltes & Freund, 2002; tenacious goal pursuit or flexible goal adjustment; Brandtstädter, 1998; or primary or secondary control processes; Heckhausen, 1999) used by a person in a given instance of individual ←→ context relations.

The combination of nomothetic, differential, and idiographic attributes that are present in every person not only makes the study of resilience difficult from a measurement perspective but, along with the other measurement issues we have

noted, requires that a new generation of resilience research be framed by an expression of the complex, interrelated set of questions we noted on page 293: For individuals of what characteristics, that is, for people possessing what ideographic, group differential, and nomothetic features of human functioning, what characteristics of intentional self-regulation; with what structure and content; within or across what portions of development; and in combination with what features of intentional self-regulation; in what normative or nonnormative proximal (e.g., family, school, work place) and distal (e.g., community, society, culture, historical epoch) facets of the ecology of human development; and in interrelation with what array of developmental assets are adaptive individual ←→ context relations instantiated?

Obviously, addressing this complex question involves engaging in a long-term program of research. Perhaps equally as obvious, however, is that answers to these questions have important implications for applications to human development programs and policies. This observation leads to some final comments about the study of resilience across the life span.

CONCLUSIONS AND RECOMMENDATIONS FOR APPLICATION

Attempts to promote positive human development are of fundamental concern to developmental science. They afford insight into how to test theoretically predicated explanations of fundamental ontogenetic processes, and thus actualize the optimization goals of the field (Baltes et al., 1997, 2006; Lerner, 2004). As such, a focus on resilience across the life span will elucidate the ways in which relations between active individuals and active facets of their ecologies can be constituted to be mutually beneficial to the person and his or her world.

The relational developmental systems approach to the study of resilience across the life span provides a largely nascent program of research to account for the facets of contexts and of individuals, groups, and people in general that must be aligned to optimize the life chances of our diverse humanity. While this research is ongoing, and we still have much to learn about the adaptive developmental regulations that reflect resilient functioning across the life span, we already have enough knowledge to suggest to practitioners and policy makers that their actions should focus on both individual and context and, in particular, on mutually beneficial exchanges between the two, for any human and for humans in general to thrive.

In addition, the theoretically framed knowledge base we have presented affords other recommendations for application. For instance, practitioners may take a strength-based approach to promoting successful interactions with the context. If resilience reflects successful functioning when the person's individual ←→ context relations involve high levels of risk and adversity (see Figure 14.1), then

practitioners may explore the developmental history or current circumstances of individuals in order to identify such successful relations and seek to replicate them when the person is not showing resilience. In addition, because resilience is not just a person-level characteristic, practitioners should seek to identify the resources in the environment that can enhance the probability that past successes will be reenacted or that will create new, innovative, and healthier individual ⟵⟶ context interactions.

Simply, our message for application is to build on strengths, try to use the resources that keep individual ⟵⟶ context relations below the tipping point requiring resilience, enhance previous successes, and look for new contextual resources to enhance the probability of resilience. The evaluation of programs and policies predicated on such a relational developmental systems approach to positive human development may, then, feed back to researchers by clarifying steps that may work in enhancing the presence of resilience and the ensuing quality of the human condition across the life span.

NOTES

1. Clearly, the translation of this theoretical probability distribution into empirical reality will vary in relation to individuals across their life spans, as well as in relation to group differences and diverse contexts. In short, there is intraindividual variability, and between-group differences in intraindividual changes in the empirical probability distribution pertinent to resilience.
2. Individual actions that are not supportive of the institutions and agents of the ecology (that are acting to support the individual) are ultimately not reflective of resilience and, as well, are not sustainable (Lerner, 2004).

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Index

Note: Page references followed by "*f*" and "*t*" denote figures and tables, respectively.