Out of Options

A COGNITIVE MODEL OF ADOLESCENT SUICIDE AND RISK-TAKING

Kate Sofronoff, Len Dalgliesh, and Robert Kosky

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This book tackles an area of adolescent behavior that presents a significant challenge for parents, teachers, and professionals the world over. Although much has been written on the topic of adolescent suicide, we see continued high rates throughout industrialized nations. The overlap between suicidal behaviors and other forms of serious risk-taking is a relatively new avenue of research and gives insight into the motivations of some adolescents. The cognitive model developed and evaluated in this book provides further insight into the progression from early problems faced by young people to the serious outcomes of suicide and risk-taking. The model allows us to suggest points of intervention for young people and to demonstrate that, although there are overlapping features between suicidal and risk-taking behaviors, attempts to intervene would target different problem areas for suicidal adolescents than for risk-taking adolescents.

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OUT OF OPTIONS

A Cognitive Model of Adolescent Suicide and Risk-Taking

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We dedicate this book to the many young people who helped us by talking to us so openly at difficult times in their lives and by answering questionnaires that were undoubtedly tedious for them. Many of these young people espoused a hope that by helping us they would in some way be helping other adolescents. Although we know that movement in this area is slow, there are currently projects and interventions in progress that may see this help eventuate for some young people.

Special thanks must also go to Kate Lilley, whose work in proofreading and editing made the final draft of this manuscript possible.

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Preface

This book focuses on one aspect of youth suicide prevention – the role of cognitive mediators in the suicide process in young people. We have written it because the topics we investigated may contribute to practical interventions to prevent suicide in young people.

Most current suicide prevention programs are educational in nature. They try to give young people knowledge about where to go for services and how to recognize symptoms in themselves and their peers. This is a reasonable approach, since one of the barriers to young people's accessing adequate care, and one of the causes of delays in treatment, is the lack of this information (Sawyer, Kosky, & Graetz, 2000).

However, even with this knowledge, it is not clear whether a young person who is seriously suicidal and in a crisis can utilize it to avoid the adverse outcome. To do so requires appropriate cognitive skills, the ability to work out what is important and what is not, and the capacity to apply the knowledge to solve the looming problems. We have focused on this point in the suicidal process. We have tried to assess whether there are cognitive skills that are deficient in

suicidal young people and, if so, whether any clear implications for clinical programs in suicide prevention flow from this.

For a previous work, one of us sat in on juvenile court hearings to listen to the stories of the young people who faced the courts (Sofronoff, 1999). Another of us surveyed young people who were in detention centers (Kosky, Sawyer, and Gowland, 1990). We were both struck by the evident similarities between young people who take serious risks and those who were seriously suicidal. Serious risk-taking youths often end up in the juvenile justice system. Seriously suicidal youths often end up in the mental health system. Both have potentially fatal outcomes.

Our clinical impressions and research findings about young people in the criminal justice system have, of course, been noted by others, notably Lewis (1988). Taking as our focus the processes that lead to these adverse outcomes, we have tried, in this book, to measure the differences and similarities in the cognitive capacities involved in the decisions made by young people who are attracted to suicide or risk-taking. Again, we have done this with a view to developing a practical approach to suicide prevention.

We begin the book with an overview of risk factors in suicide and risk-taking youth. Then we follow with a qualitative comparison of young people who do not exhibit suicidal or risk-taking tendencies with those who are suicidal or risk takers. We then use the findings from these comparisons to derive a hypothesis about the cognitive skills of young people who make up the target groups.

We attempt to fit these findings into a model of suicide in which we posit cognitive processes as mediators between pathological emotional states and adverse outcomes. From this we develop a number of practical suggestions in relation to prevention. Of course, we are not yet in a position to be able to test these possibilities insofar as they can prevent suicide; that would require further research and perhaps other people to follow up our ideas.

Introduction

There are many different definitions of suicide, and it is important for us to define from the outset what we mean by suicide and attempted suicide. Durkheim (1951), in his important contribution to the taxonomy of suicide, "Le Suicide," defined suicide as follows:

> All cases of death resulting directly or indirectly from a positive or negative act of the victim himself which he knows will produce this result, whereas an attempt is an act thus defined but falling short of the actual death. (p. 44)

It is this definition that we use in this book. In particular, we should note that when we talk about "attempted" suicide, we are talking about failed suicide. In other words, the young people in this book who make up the categories involving attempted suicide were drawn from hospital populations. Their suicidal act had resulted in damage to themselves to the extent that they required medical treatment, even though this damage fell short of actual death. Since it is not possible to use young people who have completed suicide in research of this type, those who have failed in the suicide attempt are the closest we can come to a group who have not survived the tragedy of suicide.

The definition proposed by Durkheim has proved useful for purposes of communication among workers in the field and for gathering statistics. It forms the basis of the national statistics available from most countries. However, it has its limitations. Although it alludes to intention by including "knowing the result of the act," it says nothing about the processes that bring a person to this point.

There have been other definitions of suicide that have alluded to process or to the way in which suicide may develop in a person. Shneidman (1985) provided a definition that regards suicide as an act undertaken by those suffering from a complex and painful condition to which suicide is a solution:

> suicide is a conscious act of self-annihilation best understood as a multidimensional malaise in a needful individual who defines an issue for which suicide is perceived as the best solution. (p. 203)

This definition implies a link between suicide and problem-solving deficits. It is this link that we propose to investigate in this book. We contend that some adolescents who make a suicide attempt are doing so in a maladaptive effort to solve their problems. This is by no means an original idea and has been proposed by a number of other investigators. Many of them have followed up this view with significant work, which we mention in the body of this book (McLaughlin, Miller, & Warwick, 1996; Strosahl, Chiles, & Linehan, 1992).

The idea that problem solving is a component of adolescent suicide has many implications. If suicide is seen as a solution to complex personal problems, then the issue is opened up to involve the impact of modern youth culture on young people. We note that in the past two decades, music, television, and film have dealt with the issue of youth suicide, and some at least seem to have made suicide more

acceptable as a solution to life's problems, particularly among adolescents. For instance, *Dead Poets Society*, an immensely popular film, has a young character commit suicide when he feels thwarted by his father's ambitions for him.

Why is suicide a particular problem of youth? How young are children when they perceive the finality of death? According to most of the research findings, children of about the age of 9 years understand death in a way familiar to most adults, although there is obviously great variation among children. Certainly, suicide seems rare before the age of 12 years. Quinnet (1987) suggests that younger suicide attempters are less capable of perceiving the finality of suicide and therefore more likely to see suicide as an immediate, short-term solution to their problems. With their lack of conception of finality, they think that if this fails to work, some other solutions can be tried in the future. Paradoxically, when suicide attempts are made by children, the acts are unusually violent in nature, with hanging and running into traffic figuring prominently and with a high likelihood of this being a fatal act (Kosky, 1982).

There is a change in suicide patterns after puberty. There is a rapid rise in the prevalence of suicide after a person reaches the age of 13 years. The prevalence rates peak around the age of 25 years. In this respect, suicide appears to be a developmental problem. The use of substances for poison increases as a method, although hanging and firearms are also prominent causes. There are so many things changing in adolescence, it is hard to know what might be contributing to the increasing prevalence rates for suicide. It seems unlikely that the biological processes of puberty have a specific association. The single study that looked at this issue showed that it was more likely that increasing suicide rates between the ages of 12 and 18 were due to psychosocial determinants rather than biological ones (Zubrick, Kosky, & Silburn, 1987).

Adolescent Development

Adolescence is a significant period in human biological and psychosocial development. In addition to the onset of puberty, adolescents struggle with the critical tasks that accompany the transition from childhood to adulthood. These include the establishment of an individual identity, the formulation of goals and future direction, and the move away from dependency on family and caregivers toward independence (Austrian, 2002). This transition and the factors that measure or affect its success have been a subject for intensive psychological theory and research. The most recent theory identifies three overlapping stages in the progression through adolescence: young, middle, and older adolescence (Austrian, 2002).

Puberty is perceived to be the most influential factor in young adolescence (ages 12–14). Young people are preoccupied with bodily appearance and the need to conform with an undefined code of normalcy. They adopt conformity and peer compliance as defenses against rejection and disapproval. Self-esteem is largely dependent on peer acceptance, and an emerging emotional distance from parents ensues.

In middle adolescence (14–16 years), peers remain influential in the development of interpersonal and social skills. Parental dependence fluctuates. Adolescent youth in this stage are also characterized by fluctuations in elation, irritability, moodiness, and depression that arises from biological changes or out of conflict between individual value systems and conformity to social mores. The search for identity and autonomy is further complicated by decisions regarding risk-taking and sexual behaviors. These decisions are usually foreshadowed by experimentation with alcohol and sometimes other substance use and the formation of tentatively intimate relationships. Growth in self-esteem usually stems from "successes" in these social aspects as well as from athletic or academic achievement.

Older adolescence (16–19 years) is distinguished by the capacity for consideration of the consequences of decisions and behavior. The ability to make these decisions is bolstered by the increased confidence and independence associated with obtaining a driver's licence and reaching the legal drinking age (in some countries). Successful negotiation of these issues through positive decision making results in personal and vocational skills being crystallized into young people who can find a place in society that combines individuals' own value systems and their sexual and occupational self-identities. From this position, they approach adulthood and attempt to formulate a meaning of life.

Despite entrenched opinion about the vicissitudes of adolescence, most people do not experience turmoil or psychological disturbances during the developmental processes of adolescence (Offer, Schonert-Reichl, & Boxer, 1996). Most young people enter adulthood confident in their new identity (Austrian, 2002). However, Erikson raised a point of caution. He highlighted the possibility of the development of a "negative identity," in which young people struggle with an inability to bring these developmental issues together and instead experience a sense of chronic role diffusion; they seem to choose to be "nobody," "someone bad," or even "dead" (Austrian, 2002).

Adolescents and Suicide

Attention has been focused on the problem of suicide in adolescents on a worldwide basis. Overall, most countries are reporting a rise in the rates of suicide among young people aged 15–25 years. The highest increases have been reported in the developed Western nations, although this may be an artifact produced by more thorough health-recording methods available in those countries. Nevertheless,

the rises can be clearly seen in the statistics provided by UNICEF (1993) and presented here in Figure 1.

Despite the alarming growth patterns illustrated here, the literature devoted specifically to adolescent suicide is relatively limited to epidemiology and there are still many unknown causes. For example, the role of hopelessness as a factor in adolescent suicide and attempted suicide is still unclear. The relative weight to be attached to adverse family factors, social pressures such as school pressures, thwarted ambition, experience of loss, experience of abuse, and the many other factors that have been implied as contributing to youth suicide is still unclear.

The increase in youth suicide is dominated by young male suicides. Some of these young men can only be described as model citizens. Connell (1972) pointed out that many of the young schoolchildren who attempted suicide were successful, well behaved, and highly regarded young people. However, some also come from the population that comes into contact with the criminal justice system and are likely to be aggressive, to engage in serious risk-taking behavior, and to present difficult management problems. Suicidal young people may not be catered to by available health services.

For both of these groups, the spotting of suicidal tendencies presents difficulties. For the former well-regarded group, it is often difficult for parents, friends, teachers, and others to accept that such adolescents have any problems. For them, their difficulties may be overlooked and they may do nothing to draw attention to their personal struggles. For the aggressive risk-taking youth, their personal problems may be buried underneath acting-out aggressive behaviors. In these cases, it is difficult to reach the world of turmoil that they are experiencing.

The upshot of the problem of identifying presuicidal youth is apparent in a study conducted in Norway. Of 99 boys and 30 girls who committed suicide, only 24% had ever accessed treatment for

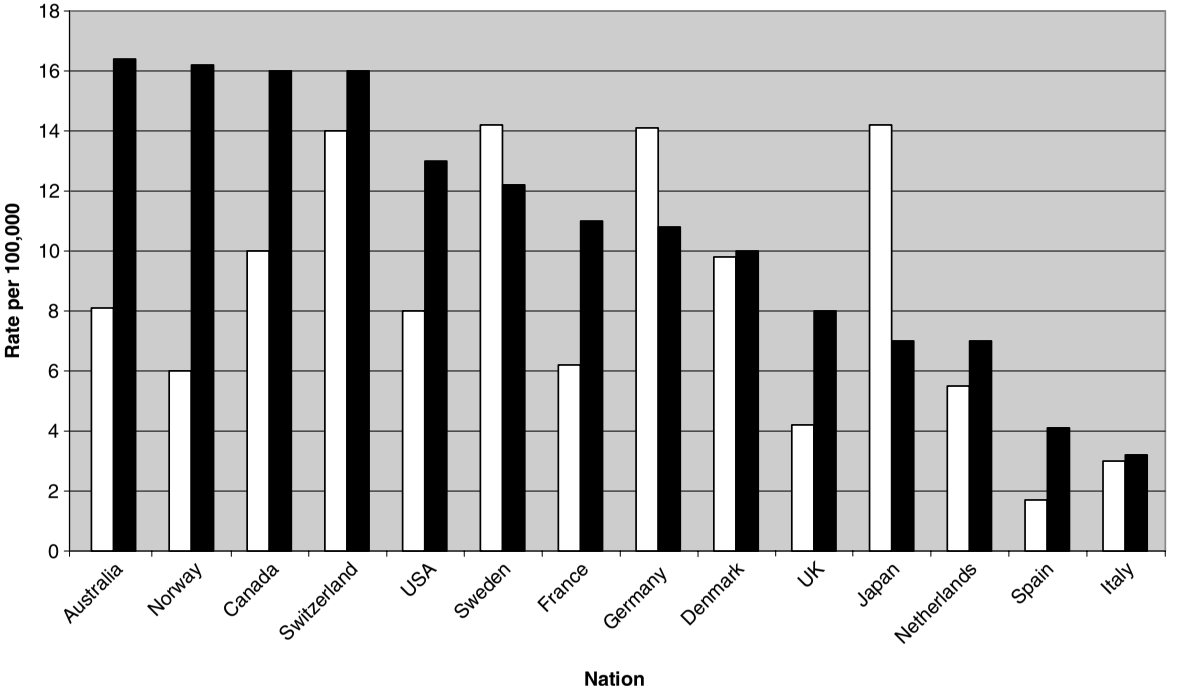


Figure 1. Rates of suicide per 100,000 for 15- to 24-year-olds in 1970 (□) and 1987–1990 (■) for 14 industrialized nations.

emotional or behavioral problems (Groholt et al., 1997). There are many examples like this from other parts of the world. This has led to the proposition that although suicide risk increases with age for adolescent males, treatment decreases (Piacentini et al., 1995).

The failure of adolescents to access services or for those services to pick up on the suicidal feelings present in some adolescents gives the development of prevention programs a sense of urgency. There is a dearth of controlled studies on treatment modalities for suicidal young people (Rudd, 2000). Risk-taking behaviors can be positively correlated with suicidal behaviors (Woods et al., 1997). We explore the nature of this link in this book.

That some such link between suicide and risk-taking should exist is not surprising, for risk-taking behaviors fall comfortably within the definitions of both Durkheim and Schneidman that we quoted earlier. Self-harm can occur through risk-taking such as driving while intoxicated, driving at high speed, binge drinking, and substance abuse as well as engaging in risky sexual and eating behaviors. At least one way of seeing these risk-taking behaviors is that they are forms of self-murder.

Although the absence of a manifest intention to cause immediate death is often relied on to exclude risk-taking behaviors from the spectrum of suicidal acts, both sets of behaviors have a central factor in common: Each is deliberately calculated to involve the risk of death and each may in fact have a fatal outcome. In this sense they conform to the definition of Durkheim. Serious forms of risk-taking behavior may differ from suicidal behavior only because the intention to cause death is not made explicit. The usual failure to clearly indicate intention tends to confound coronial inquiries, which may lead to misclassification of cause of death, for instance, of fatal motor vehicle accidents (Kosky, 1982).

As to the processes involved, there are evident similarities between the psychological and social factors considered as markers in

suicide and serious risk-taking. When one of us attended the children's court, it was very apparent that in a large number of the cases observed, the background factors of dysfunctional families, parental psychopathology, abuse, significant negative life events, and suicidal behavior were present in the stories that the young people brought to court. They were strikingly like the 18 children who were among the first suicidal young people to be systematically described in the scientific literature. These children were reported to be disturbed, depressed, and aggressive (Bender & Schilder, 1937).

The question we address in this book is this: Given the links between suicidal and risk-taking young people, do they have cognitive deficits, and, if so, are they the same ones or are they different?

An area long fraught with difficulty is the prediction of suicidal behavior. A distinguished authority (Litman, 1996) has said that, despite the current wealth of literature and research effort devoted to the topic,

> we can pick out individuals and groups who are more vulnerable to suicide than other individuals and groups, but we cannot predict which individual will commit suicide or when. (p. 3)

One aim of this book is to look at possible similarities and differences in the populations encompassed by suicide and risk-taking behaviors and to draw that information together as a model of suicidal and risk-taking behavior. This model would show how adolescents progress to these extreme behaviors. These pathways will show those variables that are significant mediators between early indications of risk and the later adverse behaviors. If it is possible to produce such a model and to justify it through empirical data, then it will provide opportunities to predict the potential for adverse behavioral outcomes, thereby increasing the opportunities for early interventions to prevent these outcomes.

1 Adolescent Suicide: An Overview of the Epidemiology

Epidemiology

Epidemiological studies indicate that suicide is a leading cause of death among adolescents throughout the industrialized world. The rate of suicide among adolescents increased dramatically over the last part of the 20th century, and this increase is of the greatest concern to the community. In the United States of America, the overall rate of suicide has remained steady but the mean age of those committing suicide has decreased. The rate at which young people commit suicide has risen dramatically (see Table 1). This trend is mirrored in Australia, where the overall rate of suicide for 15- to 24-year-olds is 16.4 per 100,000, among the highest in the industrialized world (UNICEF, 1993).

Age and Gender

The suicide rate among male adolescents, aged 15–19 years, is particularly alarming. In Australia, the Australian Bureau of Statistics

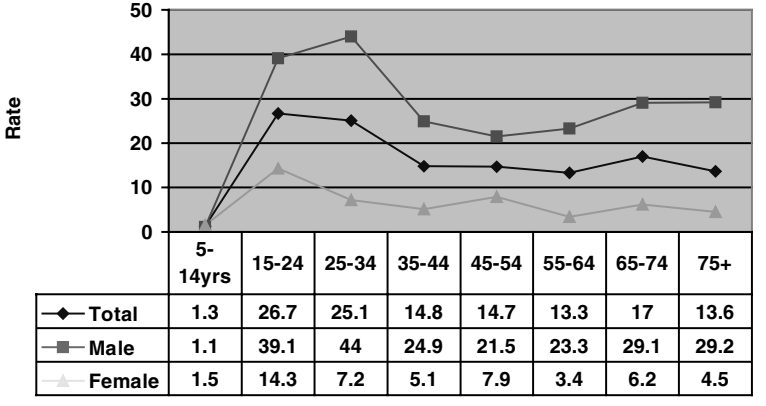
Table 1 U.S. Suicide rates per 100,000 of population by age groups, between 1957 and 1987

Year	Ages 15–19	Ages 20–24	Ages 15–24
1957	2.5	5.8	4.0
1987	10.3	15.3	12.9
% change	+312	+163	+222

Source: From *Vital Statistics of the United States* (annual mortality summaries), U.S. Department of Health and Human Services, Hyattsville, MD: National Center for Health Statistics (in Lester & Yang, 1998).

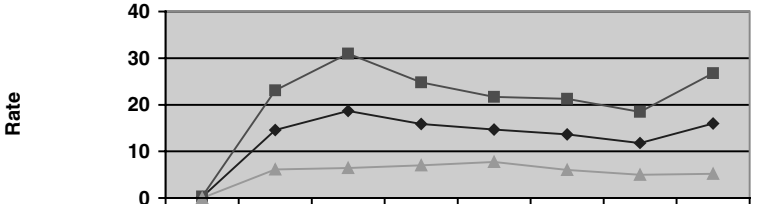
(1995) reported a fourfold increase between 1960 and 1995 in suicides for young males. In 1960, 50 males between the ages of 15 and 24 committed suicide, representing a rate of 6.8 per 100,000 of the general population. By 1994 this had increased to 384, or a rate of 27 per 100,000. Female suicides are significantly less common than male suicides (approximately 1:5; Leslie, Stein, & Rotheram-Borus, 2002).

These trends are seen across the world. Figures 1.1 through 1.5 illustrate both the gender discrepancy in suicide and the increase in



	5-14yrs	15-24	25-34	35-44	45-54	55-64	65-74	75+
Total	1.3	26.7	25.1	14.8	14.7	13.3	17	13.6
Male	1.1	39.1	44	24.9	21.5	23.3	29.1	29.2
Female	1.5	14.3	7.2	5.1	7.9	3.4	6.2	4.5

Figure 1.1. Suicide rates (per 100,000) by gender and age, New Zealand, 1996.

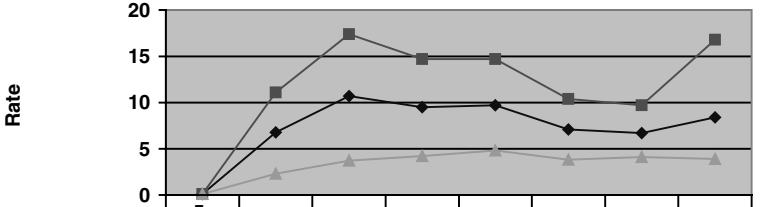


	5-14yrs	15-24	25-34	35-44	45-54	55-64	65-74	75+
Total	0.2	14.6	18.7	15.9	14.7	13.7	11.8	16
Male	0.3	23.1	31	24.8	21.7	21.3	18.5	26.8
Female	0	6.1	6.4	7	7.7	6	5	5.2

Figure 1.2. Suicide rates (per 100,000) by gender and age, Australia, 1995.

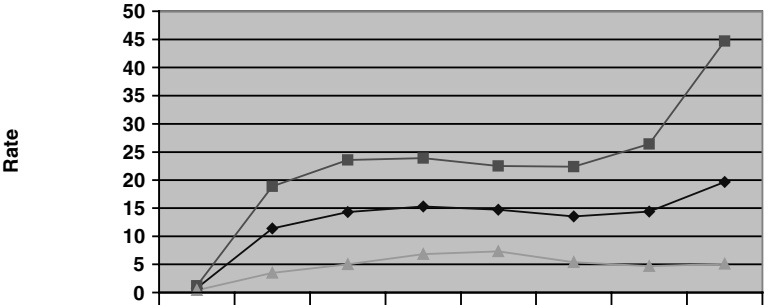
adolescent rates in a selection of countries. The statistics are the most recent available and were obtained from the World Health Organization, Geneva, 2000.

Adolescent males with substance abuse and conduct disorders have been established as major contributors to the rise in suicide rates among young people (Litman & Farberow, 1986; Wunderlich et al., 2001). In the United States there is also ready access to guns, which may be even greater than usual, for young people with this combination of behavioral problems. Guns are involved in 60%



	5-14yrs	15-24	25-34	35-44	45-54	55-64	65-74	75+
Total	0.1	6.8	10.7	9.5	9.7	7.1	6.7	8.4
Male	0.1	11.1	17.4	14.7	14.7	10.4	9.7	16.8
Female	0.1	2.3	3.7	4.2	4.8	3.8	4.1	3.9

Figure 1.3. Suicide rates (per 100,000) by gender and age, United Kingdom, 1997.

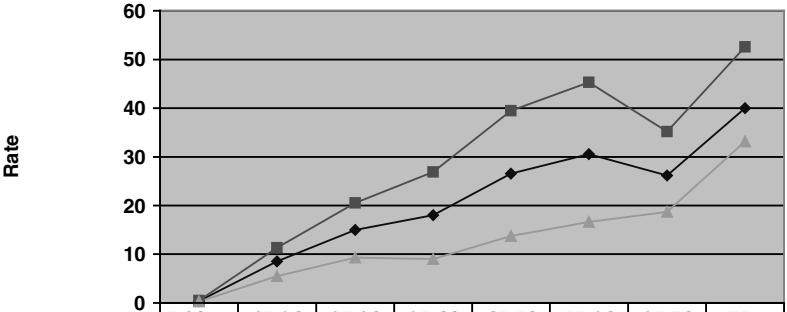


	5-14yrs	15-24	25-34	35-44	45-54	55-64	65-74	75+
Total	0.8	11.4	14.3	15.3	14.7	13.5	14.4	19.7
Male	1.2	18.9	23.6	23.9	22.5	22.4	26.4	44.7
Female	0.4	3.5	5	6.8	7.3	5.4	4.7	5.1

Figure 1.4. Suicide rates (per 100,000) by gender and age, U.S.A., 1997.

of the suicides in the U.S.A. These troubled American youths are extremely difficult for mental health services to deal with, and they tend to "fall through the cracks" in terms of orthodox treatment facilities.

Although suicide risk for younger males increases with age, the chances for treatment may decrease (Piacentini et al., 1995). This



	5-14yrs	15-24	25-34	35-44	45-54	55-64	65-74	75+
Total	0.4	8.5	15	18	26.6	30.6	26.2	40
Male	0.5	11.3	20.5	26.9	39.5	45.3	35.2	52.6
Female	0.3	5.5	9.3	9	13.7	16.6	18.7	33.2

Figure 1.5. Suicide rates (per 100,000) by gender and age, Japan, 1997.

paradoxical trend may be related to higher rates of conduct disorder and substance abuse found among older male adolescents, which seem to reduce the likelihood of seeking assistance or of receiving it from wary service providers. In addition, these conditions usually carry low levels of compliance with treatment (Weiner, Abraham, & Lyons, 2001). Similarly, adolescents who exhibit conduct disorder or who have substance abuse problems are often neglected in research because they are difficult to access, difficult to deal with on a consistent basis for research projects, and taxing on the emotions of research staff. For instance, an exhaustive follow-up study of juveniles in detention centers could only locate 50% of these youths after their release (Kosky, Sawyer, & Fotheringham, 1996), and such an attrition rate is not uncommon among these young people in research studies that require the subject's cooperation over time (Lewis et al., 1994).

Rates of attempted suicide are much greater than rates of actual suicide. About 1 in 200 females and about 1 in 500 males aged 15–24 years attempt suicide each year, compared with an actual suicide rate of about 1 in 20,000 for females and 1 in 5,000 for males of the same age in Australia (Davis & Kosky, 1991). Furthermore, it has been found that a previous suicide attempt puts a person at significantly greater risk for future attempts as well as for completed suicide. King et al. (1995) found that 18% of adolescents hospitalized after an attempted suicide tried to commit suicide again within 6 months.

Up to 60% of high school students who attempt suicide have experienced times when they had thoughts about suicide prior to the attempt (Lewinsohn, Rohde, & Seeley, 1996). It may be that suicidal ideation predicts future suicidal behavior. Unfortunately, there is also evidence that increased suicidal ideation actually decreases the likelihood that the adolescent will seek help (Carlton & Deane, 2000). The studies in this book look closely at suicide attempters and adolescents with depressive symptomatology who may consider suicide as a way of overcoming their problems.

2 Risk and Predisposing Factors in Adolescent Suicide

Introduction

It is commonly accepted that there are risk factors and personal vulnerabilities that make a person more likely to attempt suicide or to commit suicide. These factors include sociocultural and individual influences. Durkheim (1897) considered social and cultural factors to be the major influence on suicidal behavior. In fictional literature, such as Shakespeare's story of Romeo and Juliet, the stress of personal relationships was often foregrounded as a powerful influence. Freud also considered suicide to be a psychological act, with personal problems and sociocultural pressures, such as school expectations, contributing to the outcome. The literature continues to debate the relative importance of individual, psychiatric, and environmental stressors in explaining suicidal behavior; the following review highlights the complexity of the interrelationships among these factors.

Environmental Variables

STRESSFUL LIFE EVENTS

Stressful life events or recent family difficulties have been found to precede most adolescent suicide attempts. The most common problems that occur in the weeks before an adolescent suicide or suicide attempt include relationship breakups, interpersonal conflict, and difficulties with discipline and the law (Shaffer & Piacentini, 1994). Unresolved conflict within the family and a lack of closeness between family members are also commonly reported (Kosky, Silburn, & Zubrick, 1990b; Watt & Sharp, 2001). This implies that many suicidal adolescents do not feel supported by their family when they feel at their most vulnerable.

Disciplinary crises, for instance in school or with the law, were found to have occurred as immediate precursors in 36% of 30 children aged 12–15 years who committed suicide in the U.K. (Shaffer, 1974). Such crises along with those caused by separation or loss occurred in all but 2 of 53 completed adolescent suicides in Norway (Marttunen et al., 1994). A second study limited to 19 female suicides aged 13–22 years revealed similar results, with interpersonal difficulties of this sort preceding the suicide in all but one case (Marttunen et al., 1995). These findings are hardly surprising since it is usually supposed that any act as serious and desperate as self-destruction must surely follow a personal crisis. The question is why the adolescent chose suicide as a solution to this problem. Similar situations are borne by almost all teenagers in the course of their schooling and life. What made suicide the only option?

Suicidal adolescents tend to experience a period of escalating problems that start with the onset of puberty (Hoberman & Garfinkel, 1988) or simply with increasing age (Zubrick et al., 1987). A study that compared adolescent suicide attempters with depressed adolescents

and a control group found that the suicidal group had experienced more negative life events in the previous year than either of the other two groups (de Wilde et al., 1992). These negative events, however, were not seen to have been the cause of the suicide attempt; Hoberman and Garfinkel (1988) point out that although it is true that some form of stress precedes most suicides, the stressors themselves are common life events for all adolescents. We know that adolescence, particularly middle and later adolescence, is likely to be a time of stress for many adolescents with respect to conflict with parents, mood disturbance, and participation in risk activities (Arnett, 1999).

FAMILY DYSFUNCTION

Other research has emphasized the role of actual family dynamics in adolescent suicide. Suicide attempters have described feeling that their families were unsupportive and stressful. They typically described them as lacking closeness, having high conflict, and exhibiting poor control (Asarnow, Carlson, & Guthrie, 1987; Kosky, 1983; Kosky, Silburn, & Zubrick, 1986).

One problem in attempting to address the problem of the relationship between an adolescent's suicidal behavior and his or her family is the possible bias in self-reports. Current mental state may result in distortions in the perception of life events. It may also be that the adolescent's psychiatric problems have caused the family difficulties that he or she complains about. Asarnow (1992) found that higher levels of depression and low levels of family closeness were correlated with suicidal behavior in a group of 6- to 13-year-old psychiatric inpatients. These findings suggest that family problems, stressful life events, and psychological factors interact in the process of suicidal behavior.

A lack of closeness between family members can be a major contributing factor in the development of depression (DiFilippo &

Overholser, 2000). Garrison et al. (1990), however, found that only 21% to 36% of the variance in depressive symptom scores could be explained by a lack of intimacy within the family. Demographic, family, and life event data failed to offer insight into the additional causes of depression. This suggests that the development of depression is complex and is likely to have multiple causes.

The results of these studies provide an insight into the kinds of background factors that may place young people at greater risk of developing depression and other psychological problems, and how these factors may further interact to increase this risk. These studies suggest that undesirable life events and a lack of closeness between family members are potentially associated with an increase in thoughts about suicide.

INTERPERSONAL INTERACTIONS

Relationship breakdowns and disciplinary crises were found to be major contributors to suicide in a study of 120 completed adolescent suicides (Gould et al., 1996). The factors examined included socioeconomic status (SES), parent–child relationships, severe physical punishment, parental psychopathology including history of suicide and criminal activity, stressful life events, school or work problems, and psychiatric diagnoses. It is most important to note that the found stressors existed within the context of symptoms of psychiatric problems. Gould et al. (1996) concluded that once they had adjusted for the presence of the adolescent's psychiatric disorder, the only other problem that contributed to adolescent suicide was adverse parental involvement with the police. This was a psychological autopsy study, however, and therefore used post-mortem data.

The findings from studies looking at environmental factors are mixed. Kienhorst et al. (1990) concluded from their study that psychological factors such as depression and self-concept increase

suicidal behaviors in adolescents more than sociodemographic variables such as gender and parental divorce. A second study, however, found that both depression and low levels of social support from the family increase adolescent vulnerability to suicidal behaviors (Lewinsohn, Rohde, & Seeley, 1993).

FAMILY INTERACTIONS

The families of suicidal adolescents may tend to avoid conflict more than the average family. Mitchell and Rosenthal (1992), however, found that although these families did avoid conflict, they were no more overprotective or overinvolved with their child than the families of nonsuicidal adolescents. Conflict avoidance within the family might explain why suicidal adolescents feel isolated, alienated, and powerless. It may be that low family support and poor conflict resolution within the family make it more likely that an adolescent will show poor problem-solving skills and increased levels of hopelessness. A vulnerability to psychiatric problems would place these adolescents at even greater risk of developing suicidal behaviors.

It is often suggested that parental divorce may increase an adolescent's vulnerability to suicide. Gould et al. (1998) found that, in general, parental divorce increased suicide risk only if the mother had psychiatric problems or the father had been in trouble with the police. The study also assessed the indirect effect of separation or divorce on suicide through increased risk of mood disorders, disruptive disorders, and substance abuse. Only substance abuse was more common in divorced or separated families, and this was only significant if the father had a history of criminal behavior. It would therefore appear unlikely that parental divorce or separation can explain the dramatic increase in adolescent suicide. There does, however, appear to be a connection between divorce or separation and parental

psychiatric disorders, and these problems are frequently found in the backgrounds of suicidal adolescents.

It is also important to take into account the difficulties associated with studying life events and family problems in relation to suicidal behavior. The current mental state or personality profile of the adolescent may influence his or her impression of particular life events, or even create an environment where negative events are more likely to occur. In other words, it is necessary to consider the importance of life events within the context in which they occur and to gather other information to try to understand the development of these events. It is also the case that in many of these studies the information is collected after the suicide has occurred, and the fact that a family member has committed suicide may influence the memories that individuals have about past events. It is also possible that the inconsistent findings seen in these studies are caused partly by the differences in the populations that researchers choose to study, and the varied approaches adopted by these researchers. Different studies not only measure different factors but also use varying methods of studying these factors.

In summary, the literature points to the fact that the adolescent's environment and family may play a role in the development of suicide risk and should be included in any model of adolescent suicidal behavior. It also seems fairly certain that a stressful life event such as relationship breakdown, problems with discipline, or some other significant stressor will act as the immediate trigger for the act. The literature also suggests that these problems often coexist with psychiatric disorders, and that it is the combination and interaction of these factors that produces suicidal behavior. Unfortunately, these environmental and family problems that predispose children and adolescents to depression, substance abuse, or behavioral problems will probably still be present in the background after the young person has developed problems.

Intrinsic Factors

The personal traits that make it more likely a child will develop some form of psychiatric problem in adolescence interact with stressful life events and environmental circumstances. Some of these traits are distinctly individual, such as gender and genetic disposition, but others could also be seen as stressful life events or family factors, such as abuse as a child or a family history of psychiatric problems. Intrinsic factors are defined here as those factors that may have existed and influenced the child over time and thereby become an intrinsic part of the adolescent's character.

GENDER

Many studies have stressed the fact that gender is a risk factor for both major depression and suicide attempts. Adolescent girls are much more likely than boys to be depressed, have thoughts about suicide, and to attempt suicide. Adolescent boys, on the other hand, are more likely to complete suicide. King et al. (1993) found that approximately five times as many boys as girls in the 15- to 24-year-old age group will commit suicide; however, 1 in 10 girls and 1 in 25 boys are likely to report a suicide attempt (Lewinsohn et al., 1996). The fact that these findings are self-reported may distort the differences between the genders, as girls may be more willing to admit a suicide attempt than boys.

It is likely that there are also gender differences in the combination of disorders that occur during adolescence and the level of risk for the adolescent that accompanies these combinations (Wichstrom & Rossow, 2002). Typically, boys display symptoms of substance abuse and conduct disorder while girls show symptoms of depression and anxiety (Leslie et al., 2002). However, findings are once again mixed. Andrews and Lewinsohn (1992), for example, found that boys who suffered from an anxiety disorder were at

an increased risk for suicide but girls were not. Some studies suggest that males and females are equally likely to attempt suicide, especially if they use alcohol or drugs (Hollis, 1996), and that the gender bias disappears with increasing age (Wunderlich et al., 2001). Unfortunately, males frequently attempt suicide by means such as using firearms and hanging that are more likely to prove fatal (Wichstrom & Rossow, 2002; Wunderlich et al., 2001).

The information gained from this literature is important because it indicates the types of psychological disorders we might expect to see in girls and boys who have been exposed to the risk factors and background variables discussed in this review. We can conclude that although girls will more commonly exhibit depressive symptomatology and will attempt suicide, boys more commonly display conduct problems and their suicidal behavior is such that death is more likely to result before any help is accessed through mental health services. It is imperative, therefore, to engage those adolescent males who participate in risk behaviors before they reach the stage of attempting suicide.

SEXUALITY

Though lacking in depth and longevity, there is significant research to foreground young people who are gay or bisexual as being at special risk of attempting suicide (Leslie et al., 2002). A recent study performed by D'Augelli, Hershberger, and Pilkington (2001) on lesbian, gay, and bisexual (LGB) youths confirmed this association between suicidality and sexual orientation: 42% had sometimes or often thought of suicide and one third (33%) reported at least one suicide attempt. In a population-based study of Minnesota public schools, 28% of gay or bisexual males and only 4% of heterosexual males reported a past suicide attempt. The results for females, though less convincing, showed a similar discrepancy, with 21% of

lesbian or bisexual females and 15% of heterosexual females reporting an attempt (Remafedi et al., 1998). Garofolo et al. (1999) also concluded that sexual orientation had an independent association with suicide attempts for male youths. Psychological autopsies of adolescent suicides do not support higher rates of suicide among homosexual young people, and the figures reported are not significantly greater than community surveys. It may be, however, that there are somewhat different risk factors operating for this population.

Research is now directed toward the predicting factors for this "special risk" group. In many cases, risk factors outlined in this book are exacerbated for LGB youths. These youths are more likely to suffer from a lack of support from social networks and an increased risk of negative health behaviors, and they are more likely to experience victimization, threats, and ejection from their homes (Leslie et al., 2002). Generally, suicidal LGB youths acknowledged a relationship between their suicidal ideation or suicide attempts and their sexual orientation (D'Augnelli et al., 2001). Most suicide attempts followed awareness of same-sex feelings and preceded disclosure of sexual orientation to others. A test for correlation with negative parental response to youths' sexual orientation found that of suicide attempters in a sample of LGB youths, 48% perceived their father and 28% their mother as being rejecting or intolerant compared with 28% and 19% for nonattempters (D'Augnelli et al., 2001).

McDaniel, Purcell, and D'Augelli (2001) emphasized the limitations associated with studying this particular demographic. Apart from the small sample sizes created by a relatively low prevalence of both suicide and homosexuality, one must take into account the fact that sexual identity is still developing in adolescence. The common reluctance among young people toward disclosure creates results that are skewed toward youths who are comfortable with their sexuality. However, movement toward greater community acceptance and

removal of discriminatory laws may alter these dynamics of reluctant disclosure and perceived rejection. It is possible that an individual's masking of development of same-sex preferences may affect current postmortem analyses by hiding this as a reason for suicide. It is also the case that definitions and measures for sexual behaviors and orientation have yet to be standardized.

FAMILY HISTORY OF PSYCHIATRIC ILLNESS

Brent (1995) suggests that parental psychological problems such as depression, substance abuse, and criminal and antisocial behavior can cause problems for children in several ways. The children are not only more likely to suffer from the same disorders but also to grow up in an environment that puts them at greater suicide risk. This suggestion is supported by the fact that psychological problems have been found in the parents of adolescents who have committed suicide, even when these adolescents appeared to be free of such disorders themselves (Brent et al., 1993b).

Psychological problems in divorced parents may also increase the risk of adolescent suicide. Children of divorced families are only at greater risk of attempting suicide than those from intact families if their parents have psychological or criminal problems (Gould et al., 1998). In addition to this, it seems to be the case that divorced mothers are more likely to suffer from mood disorders.

EXPERIENCES OF ABUSE AS A CHILD

It has been widely suggested that suicide attempters and depressed adolescents are much more likely than nonsuicidal adolescents to have experienced sexual or physical abuse. We know that research continues to show depression as a significant psychological consequence to sexual abuse (Pillay & Schoubben-Hesk, 2001).

Silverman, Reinherz, and Giaconia (1996) examined the relationship between the experience of physical and sexual abuse as a child and the later development of psychological problems. The results strongly indicated that young adults who had experienced physical or sexual abuse were at risk for developing major depression, posttraumatic stress disorder, antisocial behavior, substance abuse disorder, suicidal ideation, and suicide attempts. A large number of these adolescents showed symptoms of two or more psychiatric disorders. At age 21, one in four had made a suicide attempt.

These findings have been supported more recently in a study by Wunderlich et al. (2001), who also found an elevated rate of sexual abuse and related posttraumatic stress disorder among female adolescents who had attempted suicide.

GENETIC PREDISPOSITION

Many studies show support for the idea that some people are genetically vulnerable to developing disorders such as depression (Winokur, 1991). Genetic factors may increase the likelihood that depression will develop by making an individual more sensitive to the depressive aspects of stressful life events.

There may be independent genetic influences for suicide that are independent of depression or linked to depressive disorders (Kety, 1990). To take this information a step further, Pandey et al. (1995) looked at the possibility of a biological marker for suicidal behavior. They reasoned that since most suicide victims suffer from a disorder such as depression, schizophrenia, or alcohol dependence, and since abnormal neurotransmitter functioning is implicated in these disorders, then it might be important to assess biological factors in suicide. The study found that abnormal seratonergic mechanisms (platelet 5-HT_{2A} receptors) were found in suicidal patients. They found a higher incidence of these platelet receptors even if the patients did

not have a psychiatric disorder, and they suggested that this may be genetically determined.

Mitterauer (1990) also examined the possibility that genetic heredity plays a role in suicide and that this role is independent of the common mental disorders. This was a postmortem study using 6,704 patients from which there were 161 suicides. The author concluded that genetic factors play a role in suicide and that this role is above and beyond the role of affective disorders such as depression. Similar findings were reported in a study that looked at adolescent suicide victims (Brent et al., 1996). The researchers found that suicidal behavior appeared to be transmitted within families independent of a broad range of psychiatric conditions, including both Axis I and Axis II disorders (American Psychiatric Association, *Diagnostic and Statistical Manual of Mental Disorders*, 4th ed., 1994). It was also suggested that these adolescents were more likely to display aggressive behaviors. As stated earlier, many of the young males who commit suicide do belong to peer groups in which aggressive behavior is common.

In summary, the literature suggests that factors such as stressful life events, family dysfunction, gender, sexuality, family history of psychiatric illness, abuse as a child, and genetic predisposition, whether combined or isolated, can make a young person more vulnerable to the kinds of symptoms and behaviors that are commonly seen in suicidal individuals. Therefore, these symptoms and behaviors might be seen as risk factors for the development of psychological disorders even though it is not possible to predict what these disorders might be. However, these factors alone do not predict psychological problems or suicidal behaviors, so we must look further in order to understand the progression toward suicidal behaviors.

Although these family and individual factors are often shown to be present in the histories of suicide victims, they are also present in the backgrounds of many young people who do not attempt suicide.

Beautrais, Joyce, and Mulder (1997) suggested that these factors might precipitate suicide in those individuals who are vulnerable to suicidal behavior. However, to be vulnerable to suicidal behavior, one must usually be predisposed to or vulnerable to one of the psychiatric disorders that most commonly precede or accompany suicidal behavior. These are reviewed in the next chapter.

3 Emotional Problems and Adolescent Suicide

The literature now almost universally accepts that individuals who complete or attempt suicide are likely to be suffering from a mental disorder (Mazza & Reynolds, 2001). Lewinsohn et al. (1996) examined adolescents who had attempted suicide and found that 100% of the boys and 94% of the girls had a diagnosable mental disorder. This was a large prospective study using data collected from 1,709 high school students who were assessed on several occasions across a 10-year period from 1985. The researchers were, therefore, able to monitor psychiatric problems associated with suicide before the suicide attempt was made. In other studies, suicidal adolescents have not been prediagnosed and it is more difficult to be certain of the relationship between psychiatric disorders and suicide. The evidence that is available, however, is compelling.

Of 53 adolescent suicides in Finland, all but 3 were diagnosed with a psychiatric disorder (Marttunen, Aro, & Lonnqvist, 1992). Fifty-one percent were diagnosed with depressive disorders, 26% with alcohol abuse or dependence, 21% with adjustment disorder, 17% with conduct disorder or antisocial personality disorder, and 6% (three

cases) with schizophrenia. Antisocial behavior during the year preceding the suicide was reported for 45% of the boys and 33% of the girls. In 78% of these cases, a diagnosis of alcohol abuse or depression was also present.

Depressive Disorder

Among the general population of adolescents, the prevalence of depressive disorder (as defined by DSM-IV criteria) is about 5% (males 4.8% and females 4.9%) according to the Survey of Mental Health and Well-Being of Australians (Sawyer, Arney, & Baghurst, 2000). Depression is the most common mental disorder associated with suicidal behavior in adolescents (Kelly, Cornelius, & Lynch, 2002). A review of seven epidemiological studies of attempted suicide found that depression was strongly associated with suicide. Across studies, past and current mood disorder was seen as a consistent risk factor for attempted suicide in both males and females. Overall, these studies found depressive disorder in 35% to 76% of suicidal adolescents (Brent, 1995).

The most powerful predictor of future suicidal behavior, other than a previous suicide attempt, is affective illness. This is particularly so when the illness is chronic, severe, or recurrent, or when the illness occurred in the presence of problems such as conduct disorder or substance abuse (Brent et al., 1993b; Kelly et al., 2002). A follow-up study of 100 adolescents who had been admitted to an adolescent psychiatric inpatient unit found that adolescents who engaged in suicidal behavior within 6 months of leaving the hospital were more likely to have chronic symptoms of depression than those who were not suicidal (King et al., 1995). More recent findings are consistent and, in addition, include substance use and risk-taking behaviors as risk factors (Stewart et al., 2001).

Adolescents who attempt suicide are far more likely to have a history of depressive illness than adolescents who do not attempt suicide. A group of high-risk preadolescents and young adolescent psychiatric inpatients was followed for a 6- to 8-year period. Those adolescents who had a history of thinking about suicide and had made a suicide attempt during the follow-up period were found to be seven times more likely to be suffering from depression than similar adolescents who had not attempted suicide (Pfeffer et al., 1991).

Depressive disorder seems to be stronger than sociodemographic factors in predicting eventual suicide. In a community sample of approximately 10,000 adolescents, depression or a mental disorder was the correct classification for 73% of those who attempted suicide and 85% of nonattempters (Kienhorst et al., 1991).

Adolescents who have attempted suicide are more likely to make a subsequent attempt if they are depressed. The relative effects of psychiatric disorders, social adjustment problems, and stressful life events on the risk of a repeat suicide attempt were examined in a group of high-risk preadolescent and young adolescent psychiatric inpatients (Pfeffer et al., 1993). Fifty percent of the suicide attempters made repeat attempts. Poor social adjustment just before the suicide attempt was the most consistent problem facing those adolescents who attempted suicide on a second occasion. These adolescents were 3.5 times more likely to have a mood disorder than those who did not attempt suicide again. This finding reinforces the suggestion that a history of suicide attempts increases the risk for future attempts.

There is some suggestion in the literature that an early development of depression is a special risk factor for suicide. A study of adolescent psychiatric inpatients found that the suicidal adolescents had suffered onset of depression at an earlier age and self-rated their depression as more severe than the nonsuicidal adolescents (Brent et al., 1990). This finding is consistent with that of Brent et al. (1993b)

who suggested that a patient with early onset depression complicated by behavioral problems or substance abuse is particularly at risk for suicide. This may be a result of chronic social impairment caused by these problems.

A review of eight psychological autopsy studies of adolescent suicides found that over 90% of the subjects had suffered from at least one major mental disorder (Brent, 1995). Although depression is the most common psychiatric problem seen in suicidal adolescents, it frequently coexists with other risk factors. There is strong evidence to suggest that other factors will increase the risk for suicidal behavior in the presence of a depressive disorder. An autopsy study found that 70% of adolescents who had committed suicide had a psychiatric profile that involved several coexisting disorders (Shaffer et al., 1996). Alcohol use, depression, and family dysfunction are common coexisting problems in patients who report having thoughts about suicide or display suicidal behaviors. King et al. (1993) found that depression plus family dysfunction was most likely to predict the presence of thoughts about suicide, but that alcohol consumption plus perceived family dysfunction predicted the presence and severity of suicidal behaviors.

An adolescent is at particular risk of attempting suicide if he or she has both depression and disruptive behavior disorders or substance abuse. Lewinsohn et al. (1996) found that half of all subjects who committed suicide suffered from a mood disorder alone or from a mood disorder combined with disruptive and alcohol or substance abuse disorders. They concluded that a limited range of diagnoses most commonly characterizes adolescent suicides. These adolescents usually have a mood disorder that may coexist with conduct or substance abuse problems.

Kovacs, Goldston, and Gatsonis (1993) conducted a longitudinal study with two samples of children who were aged 8–13 years at the

beginning of the study. Of these children, 142 had a diagnosis of depression and 49 had a psychiatric diagnosis other than depression. Eighty-seven suicide attempts were made during the study. Of these attempts, 50 (57.5%) were made during a severe episode of depression; a further 14 attempts were made by children who had both depression and conduct or substance abuse disorders, and another 9 suffered from other disorders with depressed mood. The study found, therefore, that 73 of 87 attempts (83.9%) occurred in the context of a mental disorder with depressive components.

Depression, conduct disorders, and substance abuse are often found in the family members of adolescents who are suicidal. Rao et al. (1993) conducted a longitudinal study with assessments made in childhood or adolescence and adulthood. Seven of the subjects committed suicide during the course of the study. All seven persons suffered depression, five had a family history of depression, four had a family history of alcohol abuse, and one had a family history of behavioral disorders. One of the male suicides and two of the female suicides died by ingesting an overdose of antidepressant medication.

Although the findings outlined herein emphasize the importance of depression, it is also important not to fall into the trap of looking for the best single predictor of suicide. Although depression is often present in people who commit suicide, it is not a perfect predictor, and it is not the only influence on suicidal behavior. Not all depressed adolescents attempt or even contemplate suicide. In fact, some adolescents who attempt suicide do not report feeling any depressive symptoms (Kosky et al., 1986). This has led researchers to look for factors other than depression that may place an adolescent at increased risk of attempting suicide. There are several other factors that predict suicidal behavior in both the presence and absence of depression.

Bipolar Disorder

Bipolar disorder is not as prevalent as single-episode major depression. It occurs in 0.4% to 1.5% of the population (DSM-IV, 1994) and is not a common focus of research with suicidal adolescents. However, several studies have found higher rates of suicide attempts in adolescents diagnosed with bipolar disorder compared with adolescents diagnosed with a major depressive disorder alone (Cornelius, Kirisci, & Tarter, 2001; Kelly et al., 2002; Lewinsohn, Klein, & Seeley, 1995).

Conduct Disorder, Substance Abuse, and the Issue of Comorbidity

Conduct disorder and substance abuse are the other most common disorders associated with suicidal behavior. Children and adolescents with depression differ from adults in that they frequently also display symptoms of anxiety or conduct disorder (Cantwell & Baker, 1991). Craighead (1991) emphasized the importance of recognizing such mixed disorders when dealing with adolescent depression. He pointed out that males who were diagnosed as depressed and conduct disordered were more likely to become victims of violent death, to become substance abusers, or to engage in criminal activity than those who were suffering from depression alone.

Although depression is a major predictor of suicidal behavior, adolescents who also have conduct or substance use disorder are at higher risk of suicide. A combination of these diagnoses is a more powerful predictor of suicidal behavior than a diagnosis of depression alone (Kelly et al., 2001, 2002; Weiner, Abraham, & Lyons, 2001). In a study by Kovacs et al. (1993), it was found that young male adolescents with a history of mood disorders were three times more

likely to attempt suicide if they also were diagnosed with conduct or substance use disorder. A study conducted by Kelly et al. (2002) found that, after the effects of depression were controlled for, the rate of conduct disorder was twice as high in participants who attempted suicide than in those who did not exhibit suicidal behavior.

Some research findings suggest that conduct problems may be a better predictor of suicidal behavior than depressive illness. In a 3-year longitudinal study, Myers et al. (1991) evaluated childhood depression in psychiatric inpatients and outpatients who were 7–17 years of age. The researchers found that the strongest predictor of suicidality was conduct problems followed by a diagnosis of depression. However, they also pointed out that the majority of the youths with conduct problems also had a diagnosis of major depression. They concluded that the relative risks of depression and conduct problems could not be determined. Life stress and parental psychiatric problems were slightly more common in the suicidal youths but were not significant predictors of suicide in this study.

In a sample of hospitalized adolescents, it was found that those diagnosed with conduct disorder were more suicidal and less depressed than those diagnosed with a major affective disorder (Apter et al., 1988). While depression is usually associated with suicidal behavior in adolescents, conduct disorder frequently coexists with this depression (Trautman et al., 1991).

An adolescent may present in a clinic situation as angry and hostile, in a manner typical of conduct disorder, and yet a more probing interview may reveal that he or she is deeply troubled and depressed. Lehnert, Overholser, and Spirito (1994) conducted a study comparing 104 adolescents who had been admitted to the hospital following a suicide attempt with 323 high school students who had never made a suicide attempt. The assessed items included internalized, externalized, and expressed anger; impulse control; self-image; and depression. Suicidal adolescents were found to be more likely to

experience aggressive outbursts and to have reduced impulse control. Adolescents who internalized their anger were at increased risk for depression and hopelessness.

Adolescents who abuse alcohol are likely to have been exposed to long-term stressful processes and to have an accumulation of stress. Marttunen et al. (1994) compared the recent life stressors for suicidal adolescents diagnosed with depression only, and the stressors of suicidal adolescents diagnosed with alcohol abuse with or without a coexisting depression. Difficulties regarding discipline or the law were relatively common in the alcohol abuse group, as were financial and employment difficulties. Similarly, a relationship breakdown prior to the suicide was common. In all but one case the suicide took place while the adolescent was intoxicated. The depressed group was more likely to have experienced interpersonal conflict and physical illness. The results suggest that not only are there observable behavioral differences among adolescents at risk for suicide but also that their vulnerability to various psychosocial stressors may depend on their psychiatric diagnosis.

When the alcohol abuse group was examined to compare gender differences, the results suggested that depression, a prior suicide attempt, and a previous psychiatric history were more common in female suicides (Marttunen et al., 1995). It was also found that alcohol abuse was almost as high among females as males and a high proportion of the females committed suicide while intoxicated.

The Role of Alcohol in Suicidal Behavior

In a study of completed suicide in children and adolescents, very few of the suicides showed any sign of preparation; most of them seemed to be the result of impulsive behavior (Hoberman & Garfinkel, 1988). Many of the young people were intoxicated, and the authors

suggested that this may have reduced their ability to make rational judgments about their current life circumstances. Alcohol may alter the reactions of adolescents to stressful life events. King et al. (1993) found that the severity of suicidal behavior in a group of depressed girls increased with higher levels of alcohol consumption but was not related to the severity of their depression. This is a very important finding with serious implications for treatment.

Some people use alcohol to cope with feelings of anger, depression, loneliness, anxiety, or guilt, and they believe that alcohol enhances their social behavior despite evidence to the contrary. A sample of psychiatric patients reported drinking in response to unpleasant emotions. They experienced behavioral, social, and medical problems when intoxicated and tended to engage in risk behaviors when drunk (McKay et al., 1992).

There is some evidence that there are gender differences in the pattern of alcohol consumption among depressed adolescents. King et al. (1995) found that many adolescents in a severely disturbed inpatient group had a combination of depression and substance abuse. Several factors distinguished the depressed girls also suffering from alcohol abuse from boys with the same diagnoses. The girls became depressed at an earlier age, and it was suggested that the alcohol abuse probably developed as the girls used alcohol to regulate their depressed mood. These girls exhibited more severe social maladjustment than girls with a diagnosis of depression alone. There were likely to be conduct problems, early involvement with boys, and impairment in school performance. Boys with a comorbid alcohol abuse and depression tended to be older, to show conduct disorder, and to have impaired school performance.

A high proportion of girls commit suicide while under the influence of alcohol. Marttunen et al. (1995) found that alcohol abuse in completed suicides at 21% was almost as high among females as among males. These results indicate the importance of

alcohol-related problems in youth suicide among both males and females. Adolescents who committed suicide and who had abused alcohol were likely to have suffered rather different psychosocial stressors in the weeks preceding their suicide (Marttunen et al., 1994). They were more likely to have discipline problems, relationship breakdowns, an increased number of stressors, and poor parental support. These results gave an indication of the generally poor social setting in which these adolescents, with their already marked social deficits, were struggling.

In the state of Queensland, Australia, alcohol was detected by postmortem in 39% of suicides during 1990–1992. This rate was similar for both rural and urban populations and was slightly higher for males than for females (Cantor & Slater, 1997).

The findings in these studies make it obvious that the role of alcohol in suicidal behavior is significant. Other questions including an estimation of the impact and effects of alcohol on problem solving and decision making are further discussed later in this book.

Personality Disorder

Some research shows a link between personality disorder and suicidal behavior in adolescents (Brent et al., 1993a; Mazza & Reynolds, 2001). Brent et al. (1993a) found that adolescents who attempted suicide were likely to have shown emerging signs of a personality disorder, and in particular traits of borderline personality. Since recurrent suicidal behavior, gestures, or threats is one of the diagnostic criteria for borderline personality disorder (DSM-IV, 1994), this is not a surprising finding. Although it is by no means the case that the majority of suicide attempts are made by adolescents with such a personality disorder, most of the research focus in suicide is on Axis 1

disorders (mental disorders); further research may be warranted in the area of personality disorders.

Schizophrenia

Several "psychological autopsy" studies point to the fact that a small percentage of completed suicides among adolescents have a prior diagnosis of schizophrenia (Hoberman & Garfinkel, 1988; Marttunen et al., 1992). Because it is not possible to retrieve data concerning the immediate mental status at time of death, it cannot be known how many completed suicides were in the early stages of schizophrenia and were undiagnosed. There is a strong case for early active intervention in psychoses that, if implemented effectively, may reduce suicide levels among young people who are in the early phases of a psychotic disorder (Power et al., 2003). This may be a point of some significance in suicide prevention, as a reduction in the duration of undiagnosed and untreated psychosis and prompt effective treatment intervention may be able to reduce suicide rates among members of this group (Edwards & McGorry, 2002).

Panic Disorder

Individuals with substance abuse who also had panic disorder are more likely to have attempted suicide than those who did not suffer from panic disorder (Norton et al., 1993). Andrews and Lewinsohn (1992), however, found no association between panic disorder and attempted suicide in their study. Anxiety disorders such as panic disorder are frequently found to coexist with depression. It may be this link with depression rather than the panic disorder itself that increases suicide risk. Beautrais, Joyce, and Mulder (1996) also found

that anxiety disorders did not increase suicide risk when the risk from coexisting disorders was taken into account.

In summary, it seems fair to conclude from this body of literature that while depressive disorders have a significant role to play in adolescent suicidal behavior, there are other disorders that interact with depression or act independently. In practical terms, it is often the case that these disorders have not actually been diagnosed.

Overall, the major psychiatric influences on suicidal behavior would seem to be depressive disorders, conduct disorder or behavior problems, and substance abuse or dependence. Any one of the disorders – depression, conduct disorder, or substance abuse disorder – may place an adolescent at risk for suicidal behavior, but a combination of these disorders creates a serious increase in that risk. Any model of suicidal behavior has to include these disorders or sets of symptoms. Both conduct disorder and substance abuse are discussed at greater length in Chapter 6.

4 Adolescent Suicide: Cognitive Variables

Although we can identify adolescents in the community who, through a combination of environmental factors and individual factors, are at risk of suicide when placed in a situation of stress, we still do not have a complete picture of the process leading to the act of self-destruction. It is necessary to understand the relationship between the emotional and cognitive processes that allow adolescents to reach the belief that death is the best solution available to them. The following review looks at the cognitive factors most commonly associated with suicide risk in adolescence. They include the concepts of hopelessness, problem solving, coping, and protective factors.

Hopelessness

The role of hopelessness in adolescent suicide is based on the suggestion that how a person thinks about his or her future when depressed is more likely to influence outcomes toward suicidal behavior than feeling states (Beck, 1963, 1967). Although there was some support for this theory in research conducted with adult suicide attempters,

the research using adolescents appears to be much less consistent. Rotheram-Borus and Trautman (1988) found that in a group of adolescent Hispanic and black girls, neither hopelessness nor depression predicted suicidal intent. The authors suggested that hopelessness might be a symptom of depression in adolescents rather than an independent cognitive factor predicting suicidal behavior. They also pointed out that hopelessness might not be a good predictor of suicidal intent among minority adolescents.

Cole (1989) found that mood was a more important predictor of suicide than hopelessness, especially for boys. After the effects of mood were controlled for, hopelessness did not lead to an increase in suicidal behavior. Brent et al. (1990) also found that hopelessness did not predict which adolescents would attempt suicide, and they concluded that it may not play as important a role in adolescent suicidal behavior as it appears to do in adult suicide. Spirito, Overholser, and Hart (1991) found that hopelessness failed to predict suicide attempts; however, Pinto and Whisman (1996) found that hopelessness was more common in adolescents who had thoughts about suicide than in those that attempted suicide.

Despite or perhaps because of the equivocal nature of the findings related to hopelessness and adolescent suicide, research has continued to flourish in the area. Rudd, Rajab, and Dahm (1994) used two groups – suicide attempters ($n = 43$) and suicide ideators ($n = 57$) – to test a model suggesting that hopelessness bridged the gap between stressful life events and suicidal thoughts. They suggested that this relationship would be moderated by problem-solving appraisal (a self-rating of one's ability to solve problems). Although the age range of 18–37 years indicates that this was largely an adult rather than an adolescent study, the method used is of interest, as are the findings. The items measured included stress, hopelessness, problem solving, and suicide ideation. Unlike earlier studies, negative life stress predicted neither hopelessness nor thoughts about

suicide. Problem-solving appraisal, however, was highly predictive of both hopelessness and suicide thoughts in both groups. Those people who thought they had poor problem-solving skills were more likely to feel hopeless and to think about suicide. Rudd et al. (1994) concluded that their model of suicidal behavior should be expanded to include problem-solving appraisal. Interestingly, although the differences were small and not significant, hopelessness scores were higher for the suicide ideation group than for the suicide attempters.

As hopelessness has been conceptualized as a general set or attitude to problems, there may be a degree of overlap between problem-solving appraisal and hopelessness. Once again, these results have to be clarified and the model tested on adolescents. Certainly, the methods used in the Rudd et al. study were effective and aspects of it will be used to evaluate focal variables in this book.

More recently, Goldston et al. (2001) reached a similar view that the predictive capacity of hopelessness may be due to the strong relationship between hopelessness and depression. Their study found that hopelessness did not predict later suicide attempts after depression was controlled for.

Problem Solving

There have been relatively few studies that have dealt directly with the problem-solving capacity of suicidal and depressed adolescents. Orbach, Rosenheim, and Hary (1987) conducted a study with children aged 6–12 years. This study examined the inflexible thoughts (cognitive inflexibility) that suicidal children might have about death. The children were asked to come up with alternative ideas about given situations. Although this may be a narrow measure of cognitive inflexibility, it has been found to be associated with suicidal behavior. The suicidal children were compared with chronically

ill and normal children, and the results indicated that suicidal children were less able to generate alternative attitudes toward life and death than the other children. The authors concluded that suicidal children show an attraction toward death that other children do not show.

An adolescent who has inadequate social skills will have difficulty building close relationships with his or her family and peers. Poor problem-solving skills may lead an adolescent to social isolation and increase his or her vulnerability to suicidal behavior. An important study conducted with an adolescent population looked at the issue of social problem solving (Sadowski & Kelley, 1993). The researchers compared problem solving, hopelessness, and depression in adolescent suicide attempters, nonsuicidal psychiatric adolescent patients, and normal adolescents. The suicide attempters displayed much poorer social problem-solving skills than the other adolescents. The suicide attempters rated their problem-solving ability lower than did the other groups. Both the suicide attempters and the psychiatrically disturbed groups reported poorer problem-solving skills than the normal control group. This study did not find a significant relationship between hopelessness and suicidality.

Adolescents who experience a number of stressful life events may resort to suicide because they are unable to generate alternate solutions to their problems. In an important adult study, Schotte and Clum (1987) proposed a diathesis–stress model of suicidal behavior that suggested that rigid thought processes might increase the likelihood of suicide following a stressful life event. This model suggests that some people have a reduced ability to engage in divergent or flexible thinking and cannot generate effective alternative solutions when faced with stressful situations. The model further suggests that this inability leads to a state of hopelessness that increases vulnerability for suicidal behavior. Suicidal ideators were able to come up with less than half as many potential solutions to interpersonal problems

selected from their own lives than the depressed but nonsuicidal controls. They were also more likely to suggest that the solutions would be ineffective. These suicide ideators reported a higher level of life stress, and this level of stress significantly correlated with the measures of hopelessness and suicide intent.

Rudd et al. (1994), in the previously mentioned study, aimed to replicate this study by using a clinical sample. They found that problem-solving appraisal predicted both hopelessness and suicidal thoughts. The age of the participants (18–37 years) again leaves unanswered the question of the validity of the constructs with an adolescent population.

Hopelessness and Problem Solving

Hopelessness might be the link between problem solving and suicidal behavior. Dixon, Heppner, and Rudd (1994) suggested that problem-solving appraisal, problem-solving skills, or a combination of the two are associated with an increase in levels of hopelessness and thoughts about suicide. They reanalyzed the data used by Rudd et al. (1994) and showed a direct link between hopelessness and suicidal thoughts, and an indirect link (by way of hopelessness) between problem-solving appraisal and suicide intent. Since hopelessness appears to be less consistently linked to suicidal behavior in young people, these links still need to be tested with adolescents. The studies presented in this book aim to test whether hopelessness can discriminate between different groups of adolescents. The role of hopelessness in mediating between depression, conduct problems, substance abuse, and suicidal behavior is also assessed.

A study by McLaughlin et al. (1996) compared three groups of adolescents on measures of depression, hopelessness, suicidal intent, reasons for self-harm, and a single problem-solving item (whether

the adolescents thought that taking an overdose would solve their problems). The groups were composed of adolescents who had engaged in deliberate self-harming behaviors ($n = 51$), as well as school controls ($n = 37$) and clinic controls ($n = 32$). The self-harm group of adolescents showed higher levels of hopelessness, and many of them felt unable to generate solutions to their problems. The authors suggested that the exhaustion of one's problem-solving ability might be associated with the cognitive state of hopelessness:

> [There is] a difficulty in generating solutions to problems, leading to a state where one feels there is no way out of a stressful situation. This in turn may lead to the use of maladaptive problem-solving techniques such as self-harm. (p. 524)

The study took a narrow rather than a comprehensive measure of problem solving. The adolescents were simply asked to respond to a question; their ability to generate solutions to problems was not tested directly. Problem-solving appraisal was not assessed, although it may predict both hopelessness and suicidal ideation.

Adolescents' problem solving appraisal may be as important as their actual problem solving skills. Marton et al. (1993) examined social problem solving, social understanding, and social self-evaluation in depressed adolescents. The adolescents were given photographs of five problematic situations with peers and were asked to describe the problem, generate solutions, select the best solution, and describe the possible consequences. The depressed adolescents were able to assess interpersonal problems and provide solutions but tended to think that the consequences of the outcomes of their solutions would be poor. The authors concluded that the depressed adolescents had problems with assessing the effectiveness of their own problem-solving solving ability.

A combination of ineffective problem solving and poor social adjustment is often found in suicidal adolescents. Poor social

adjustment may reflect a deficit in interpersonal problem solving. Brent et al. (1993a) attempted to explain the relationship between personality disorder and suicidality as a function of poor social and problem-solving skills. They suggested that early onset chronic affective illness might predispose an individual to cognitive distortion, poor social skills, and personality disorders. Pfeffer et al. (1993) also claimed that the strongest risk factor for a repeat suicide attempt was impairment in social adjustment just before the suicide attempt.

Coping Strategies

Several studies have investigated the relationship between coping strategies and adolescent suicidal behavior. Asarnow et al. (1987) found that adolescents with suicidal thoughts were much less likely to generate active coping strategies than nonsuicidal adolescents. Brightman (1990) found that adolescents with more severe depression were less likely to use coping strategies. In effect, these young people were susceptible to learned helplessness following failure. Cole (1989) investigated coping beliefs in relation to depression and suicide in a group of delinquent boys. He concluded that a failure to believe in one's own self-efficacy and the ability to cope is a greater risk factor for suicide than hopelessness, especially for boys. These concepts sound remarkably similar to those described by Rudd et al. (1994) as a deficit in problem-solving appraisal. That is, the adolescent either does not believe that he or she is capable of generating solutions to problems or believes that the solutions are likely to fail. In another sense, this is a hopelessness related to one's ability to manage (problem solve) one's current life circumstances, which is a more specific hopelessness than the all-encompassing construct.

It does seem that hopelessness, problem solving, and poor coping are interrelated concepts that are often seen in individuals who

display suicidal behaviors. Lewinsohn et al. (1993) also found that inadequate coping skills increased vulnerability to a suicide attempt even after the effects of depression were controlled for. Dixon, Heppner, and Anderson (1991) suggested that impaired coping (described as suicidal thoughts and a feeling of hopelessness) is a function of current stress and a belief that one cannot solve one's problems. Once again, this definition is remarkably similar to problem-solving appraisal. This explanation, however, is in line with the diathesis–stress model discussed in the following section, but it has yet to be validated with an adolescent clinical population.

It has been suggested that adolescents who use social isolation as a coping strategy might be more vulnerable to suicidal behaviors. Spirito et al. (1996) conducted a study by using five groups of adolescents: medically hospitalized suicide attempters, psychiatrically hospitalized suicide attempters, psychiatrically hospitalized suicidal ideators, nonsuicidal psychiatric patients, and a group of high school controls. The participants were assessed for coping strategies and depression. It was expected that suicide attempters would choose social isolation as a coping strategy more often than the other groups, but this was not the case. Social isolation appeared to be an equally popular coping strategy for all of the adolescent groups with psychiatric problems. The researchers also expected the suicidal children to be able to come up with fewer active coping strategies than the other groups, but this proved not to be the case. This inconsistency may be accounted for by the fact that the use of specific problem-solving strategies (active coping strategies) or attitudes to problem solving were not measured directly. In addition, the participants were not asked to generate their own coping strategies; instead, strategies were selected from a list of 10 and rated as to whether they would be used or not. An approach requiring adolescents to think of their own strategies might have highlighted differences between the groups.

In summary, although the idea that suicidal adolescents might lack the coping strategies to deal with life's problems is appealing, not all of the research findings support this hypothesis. This seems to be due to the overlap between measures such as problem-solving appraisal and hopelessness. Problem solving represents only one positive aspect of coping, and hopelessness represents just one negative aspect.

Protective Factors

Identifying maladaptive characteristics that might predict suicidal behavior has been the favored approach in suicide research. The question of whether suicidal persons actually lack important adaptive characteristics that protect others against suicidal behaviors has been marginalized. Linehan et al. (1983) approached suicidal behavior from a cognitive-behavioral viewpoint and suggested that the belief system of a suicidal person might be different from that of a nonsuicidal individual. They suggested that there are many life-oriented beliefs and expectations that may argue against attempting suicide.

The aim of their study was to compare suicidal and nonsuicidal people on a measure of beliefs and expectations hypothesized to protect against suicidal behaviors. They developed the Reasons for Living Scale (RFL), which encompassed six reasons for living factors: survival and coping beliefs, responsibility to family, child-related concerns, fear of suicide, fear of social disapproval, and moral objections. Two studies were conducted with the RFL. One study used participants from the general population and the second study used clinical populations. The results indicated that, in both populations, suicidal persons differed from nonsuicidal persons in the degree to which they attached importance to life-oriented beliefs and expectancies, which are protective factors against suicidal behavior. Participants who were

currently suicidal, as well as those who had made a prior attempt, reported fewer important reasons for living than did participants with no history of suicide. This was not true of the participants who suffered from other psychiatric problems.

Connell and Meyer (1991) used the RFL with 205 undergraduate students categorized into four groups – never suicidal, brief suicidal ideation, serious suicidal ideation, and parasuicidal. The students were also assessed for depression and hopelessness. Those students who had experienced thoughts about suicide or were suicidal were less likely to consider survival and coping beliefs, responsibility to family, and moral objections to be reasons for not committing suicide. It was also found that students with higher levels of depression and hopelessness were at greater risk of suicidal behavior.

Westefeld, Cardin, and Deaton (1992) carried out two studies in order to develop and then evaluate a measure of suicidal risk in adolescent college students based on the RFL. The six factors identified were survival and coping beliefs; college and future-related concerns; moral objections; responsibility to family and friends; fear of suicide; and fear of social disapproval. In Study 2 by Westefeld et al., another sample of 208 college students responded to the 46-item inventory produced in Study 1. These students also completed the Beck Depression Inventory (BDI; Beck, 1961) and a Suicidal Risk Questionnaire (SRQ) developed by the authors that asked the students to self-report on their current, past, and future risk of suicide. The results indicated some strong similarities between student responses and the responses from the Linehan et al. (1983) study. It was found that the survival and coping beliefs, fear of suicide, fear of social disapproval, and moral objections subscales were very similar. The major differences found were that there was no scale equivalent to child-related concerns but there was a scale that included responsibility to friends as well as to family. The authors concluded that, in this age

group, friends assume a position of major importance. Once again this is in keeping with what we know about adolescent development (Austrian, 2002).

The other analyses using the BDI and SRQ indicated that the RFL is useful in predicting the level of risk of suicide in an undergraduate population. Westefeld et al. recommended that the scale be used in conjunction with other assessment tools but suggested that the RFL does provide a unique perspective of suicide risk by measuring protective factors. A further study of the RFL–Adolescent version (Gutierrez et al., 2000) added support for the utility of the measure as well as for the approach of focusing on protective factors against suicidal behavior. Gutierrez et al. (2000) found that the measure not only differentiated between groups of suicidal and nonsuicidal adolescents but also yielded valuable information about levels of optimism, peer acceptance, and support and alliance with family. The authors noted that this level of information is clinically more useful than noting that an adolescent has an elevated hopelessness score.

Affect Dysregulation

Affect dysregulation is defined as the inability to cope with heightened levels of emotion, whereas affect regulation is the method used by a person to change or reduce emotional arousal. A study by Zlotnick et al. (1997) examined the relationship between affect dysregulation and self-destructive behaviors in suicidal adolescents. The aim of the study was to see if measures of affect regulation and measures of self-destructive and risk-taking behaviors could differentiate between adolescents who think about suicide and those that attempt suicide. The findings reported in this study are similar to those reported in the problem-solving and coping strategies

literatures, and they point to the fact that suicidal adolescents, for whatever background reasons, are less able to deal with the problems they may encounter than are other adolescents. This supports the idea that suicide attempters may have both problem-solving and emotional difficulties.

In summary, the literature suggests that there is evidence of strong links between hopelessness, problem-solving, protective factors, and suicidal behavior. Although the concept of coping is appealing, there is considerable overlap among coping, problem-solving appraisal, and hopelessness that makes the research findings difficult to interpret. The inconsistent results for coping strategies suggest that further research is required to clarify the construct. The construct of affect dysregulation is also conceptually linked with problem solving, hopelessness, and deficits in protective factors. It is evident that adolescents who engage in suicidal behaviors are likely to be in the grip of strong unpleasant emotions with which they feel they cannot cope. The more pressing question that arises is which cognitive process might produce strategies that the suicidal adolescent could use in stressful situations in the future. The model developed in this book considers hopelessness, problem solving, decision making, and protective factors as possible mediators among depression, conduct problems, substance abuse, and suicidal behaviors.

Conclusions

A majority of studies indicate that suicide attempts commonly occur in conjunction with a "mental" disorder. Depression, conduct problems, and substance-related disorders frequently precede suicidal behavior. The disorders that place adolescents at risk for suicidal behavior may also reduce their ability to think positively. Alternatively, it may be the case that these deficits were in existence

before the disorder appeared. Although it may not be possible to determine which came first, we can suggest that, when these adolescents experience a negative life event, they may be unable to generate a positive problem-solving approach, they have few effective coping strategies, and suicide appears as the best solution. Alternatively, a suicide attempt may be the only solution these adolescents can generate to reduce the emotional pain they are experiencing.

In many instances, it seems that the decision to commit suicide has not been carefully planned or even thought through. Some studies have suggested that not all suicide attempters are aware of the consequences of their actions and seem to be acting impulsively, while intoxicated, or both. Those cognitive variables that vary between disturbed adolescents who do attempt suicide and those who do not need to be explored in greater detail.

From the literature reviewed in the preceding chapters, several variables must be considered as background factors or vulnerabilities that place a child at risk of developing dysfunctional behavior patterns or psychological problems. These risk factors include the following:

- **Stressful life events**
- **Family dysfunction**
- **Gender**
- **Family history of psychopathology**
- **Abuse as a child**
- **Genetic predisposition**

The dysfunctional behavior patterns and likely psychological problems include these:

- **Conduct problems**
- **Substance-related problems**
- **Depressive symptomatology**

By the time that an adolescent shows symptoms of the aforementioned problems, there are likely to be emotional and cognitive difficulties that become apparent when the adolescent is faced with a stressful situation. The best supported and empirically documented of these in terms of suicidal behavior are these:

- **Problem-solving deficits**
- **Hopelessness**
- **Deficits in protective factors**

A model of adolescent suicide based on the literature reviewed so far, therefore, would consider the aforementioned constructs as essential components. It is important to note, however, that this would only represent a partial model. The following chapters continue with a further literature review to include those adolescents engaged in risk-taking behaviors, including behaviors that could be termed delinquent. The model is then extended to include constructs that arise as a result of this literature review.

The review in the preceding chapters has focused mainly on those adolescents recognized as being at risk because they are depressed. There is also a body of literature concerned with adolescent risk-taking behavior, but, on the whole, these adolescents are not widely recognized as being depressed. However, the delinquent, risk-taking and conduct problem adolescents are demonstrating a similar or greater risk of suicide. The aim of this book is to develop a model that incorporates both groups and identifies the mediating influences in their progression toward suicidal behavior. The next chapters address the current literature dealing with adolescent risk-taking behaviors. The full model is presented and discussed in Chapter 8.

ADOLESCENT RISK-TAKING

5 Adolescent Risk-Taking: An Overview

While suicide among adolescents is a distressing problem, it is not generally the leading cause of death among adolescents. In most industrialized countries of the world, this dubious honor goes to accidents. In the United States, accidental injury accounts for 55 per 100,000 deaths of 15- to 19-year-olds compared with 11.4 per 100,000 for suicide. In 1998, for white males (15–19 years old), the statistic for which accidental injury caused death was 70.3 per 100,000; it was 122.6 per 100,000 for black males (Center for Disease Control and Prevention, 2001). In 1997 in Australia, the figure for accidental death was 40 per 100,000 for 12- to 24-year-olds, compared with 14.6 per 100,000 for suicide for 15- to 25-year-olds (Moon, Meyer, & Grau, 1999).

It is a common belief that adolescent risk-taking behavior plays a significant role in many accidents, particularly motor vehicle accidents. For instance, 55% of adolescent deaths are attributable to motor vehicle accidents and at least half of those involve a blood alcohol level in excess of .10 (Irwin & Millstein, 1992). This indicates a willingness to risk injury to self and others as well as to ignore the legal consequences of drinking and driving. Although adolescent

risk-taking increases accidental injury, other forms of physical recklessness such as involvement with smoking, drug use, and delinquency have also been shown to be associated with depressive symptomatology and suicidal ideation (Clark et al., 1990). Similar findings were reported in Australia from the child and adolescent component of The National Survey of Mental Health and Wellbeing (Patton & Moon, 2000; Sawyer et al., 2000).

National arrest rates provide a measure of adolescent risk-taking behavior resulting in incarceration in juvenile detention centers. In Australia the arrest rate for juveniles is 1% of adolescents aged 13–17 years (Mukherjee, 1985). Most arrested juveniles do not go to court and fewer still are incarcerated. Of 13,912 charges brought before the Children's Court of Queensland in 1994, only 870 young people received a sentence of detention (Mukherjee et al., 1997). This represents an overall rate of incarceration of about 15 per 100,000 adolescents (a similar prevalence rate to adolescent suicide in Australia).

The literature concerned with adolescent suicide tends to focus on risk factors such as psychopathology, family factors, negative environmental factors, and mediating cognitive variables. In contrast to this practical approach, the literature concerned with adolescent risk-taking is generally theory based. One of the central aims of this book is to see if adolescents who engage in risk-taking behavior share common risk factors and cognitive deficits with adolescents who attempt suicide. Some adolescents who are suicidal and some who are risk takers report similar psychological problems, have destructive thought processes, and seem to carry similar predisposing factors. It may be that these two groups form a population of adolescents who engage in both suicidal and risk-taking behaviors.

For the purposes of this book, risk-taking behavior means deliberate behaviors in which the outcomes are uncertain and from which there is a possibility of identifiable and serious, possibly fatal, injury. These behaviors could cause physical harm to the participant or

others. They would include drinking alcohol and driving, driving at high speed, using illicit drugs carelessly, exhibiting aggressive behavior toward others, and, in certain circumstances, engaging in unprotected sexual activity. They also include behaviors that are antisocial and could result in serious legal consequences (shoplifting, serious vandalism, assault, theft, and drug dealing).

Despite the concentration on theoretical models, the literature devoted to risk-taking behavior among adolescents is diverse. Some studies suggest that risk-taking is a form of adolescent sensation seeking. This drive produces a failure to think of things from other points of view and to weigh up the consequences of alternative behaviors. Arnett (1990) concluded that sensation seeking and egocentrism do contribute to reckless behavior among adolescents, in particular to the tendency of some adolescent girls to have sex without taking care about contraception.

Adolescents who take risks may have poor skills for decision making. Gordon (1990) examined the area of adolescent use of contraception and concluded that adolescent girls who become pregnant because they fail to use contraceptives have difficulty creating alternative solutions to problems, in evaluating alternatives, in taking a long view of consequences, and in reasoning about chance and probability. A study that examined adolescent contraceptive use found that intelligent adolescents were more likely to make good decisions. Adolescents who had difficulty seeing things from the perspective of another person (that is, they were inclined to egocentrism) made poor decisions (Green, Johnson, & Kaplan, 1992).

Behavioral studies in the area of HIV–AIDS and risky sexual behavior among adolescents have thrown some light on the issue of risk-taking in young people. In a self-report survey of 7,699 adolescents in the U.S.A., in which the mean age was 17 years, almost 60% reported having experienced sexual intercourse and 52.5% reported having their first sexual experience before the age of 16. Almost

20% reported that emotional or physical coercion had been used to force sexual intercourse against their wishes, and 30.5% reported that drugs or alcohol were involved in their sexual experience. Eighteen percent reported having had six or more partners and a further 26.5% reported having had between three and five partners (Downey & Landrey, 1997). The authors concluded that early sexual activity, multiple partners, and the use of alcohol and drugs in sexual encounters were indicators of sexual risk-taking behavior and that this level of risk-taking may be more common than expected or even normal. Unfortunately, the study did not comment on the use of adequate protection against sexually transmitted diseases or pregnancy.

Smoking and drinking is another area of risk-taking. Adolescents who engage in these behaviors consistently overestimate the percentage of their peers who do the same (Gibbons & Gerrard, 1994 cited in Gibbons, Helweg-Larson, & Gerrard, 1995). This is known as the false-consensus effect. The false-consensus effect normalizes the behavior in question, leading to preparedness to engage in the activity at some time in the future (Gibbons et al., 1995). Use of alcohol and illicit drugs in adolescents in the 12- to 25-year age range maybe a manifestation of sensation seeking and egocentrism (Arnett, 1992). Gibbons et al. (1995) suggest that these activities serve to enhance self-image in the face of peer pressure during adolescence. Jessor (1992) suggests that we consider what an adolescent may have to gain by engaging in risk behaviors.

Risk-taking in adolescence is increasingly being viewed as a normal part of the developmental process of "growing up." A modest degree of risk-taking in adolescence is frequently considered normal and may be associated with positive psychological characteristics. Shedler and Block (1990) assessed the prevalence of risk-taking behaviors in a sample of 18-year-olds. They found that these adolescents could be grouped into three categories: abstainers (29%) had never tried any type of drug; experimenters (36%) had tried

marijuana a few times; frequent users (20%) used marijuana once a week or more and had tried at least one other drug. They found that these three groups displayed very different psychological characteristics. The abstainers tended to be tense, anxious, overcontrolled, and socially isolated with poor social skills. The frequent users tended to be troubled, withdrawn, and unhappy, and they tended to engage in antisocial behaviors. The experimenters tended to be socially competent, cheerful, and energetic, and they displayed higher levels of self-satisfaction. This suggests that a willingness to engage in some risk-taking behavior may be a normal and healthy part of adolescent development.

Differing Perspectives on Adolescent Risk-Taking

There are a number of organic causes that can lead to an increase in risk-taking behavior. Brain injury may lead to problems with controlling inappropriate behavior or an inability to regulate behavior adequately. Attention deficit hyperactivity disorder may cause problems with impulse control. Although this book cannot provide a detailed review of all possible organic or psychological causes of this type of behavior, it is nonetheless important to note that these causes should not be overlooked when one is dealing with young people engaged in these types of behaviors.

SENSATION SEEKING AND EGOCENTRISM

The developmental perspective on adolescent risk-taking describes the behaviors in terms of sensation seeking and adolescent egocentricity (Arnett, 1992). This theory suggests that some adolescents are more prone to behaving impulsively by seeking out intense and varied activities, and to having a large appetite for experience. Egocentrism is characterized by two dimensions, the imaginary audience

and the cognitive distortion known as the personal fable. The imaginary audience implies that adolescents feel themselves to be under constant scrutiny from their peers and believe that their own lives are unique and exceptional. The personal fable refers to the adolescents' belief in their own invulnerability or the tendency to believe that unpleasant consequences will not happen to them even though they may occur to others (Elkind, 1967, 1985).

It has been suggested that adolescents are egocentric and seek attention because they may not yet have developed the ability to use abstract reasoning or to correctly estimate the likelihood of an outcome. Arnett (1992) maintains that adolescents are poor at making judgments and are susceptible to assessing probability without reference to base rates or do so on the basis of stereotypical beliefs. A common stereotypical belief is the "gambler's fallacy" that, after a run of red in roulette, for example, one should bet black in order to win. "Availability" is the belief that the easier it is to imagine something happening, the more likely it is to occur. However, these shortcomings (common heuristics and biases) also apply to adults, and Arnett does not provide any evidence that adolescents rely on them any more than adults do. Fischhoff, Bostrum, and Quadrel (2000) suggest that we are all too heavily reliant on heuristics and biases and need to better understand our limitations as risk assessors.

PROBLEM BEHAVIOR THEORY

Problem behavior theory dismisses the notion of sensation seeking and egocentrism, although it does not discount the influence of family, peers, and other environmental factors in its "psychosocial approach" (Jessor, 1992). Jessor maintained that both positive and negative outcomes of risk behavior should be considered. That is, we need to consider what an adolescent has to gain from a risk experience, rather than emphasizing the potential costs alone. He continued to point out that many behaviors such as drinking alcohol,

using drugs, driving in a risky manner, and engaging in early sexual activity can be seen as important to an adolescent in gaining peer acceptance or establishing autonomy. This would appear as an extreme outcome of development through adolescence (Austrian, 2002). The theory considers personal and situational factors and identifies risk factors (unstable family environment, poverty, models for deviant behavior, and low self-esteem) and protective factors (cohesive family, conventional peer models, intolerance of deviance, and involvement in conventional activities). This approach looks at how the individual interacts with the situation and considers the role of the risk and protective factors in decision making.

Jessor (1992) pointed out that research has shown adolescent risk behaviors to be functional, purposive, instrumental, and goal directed. These goals are often important to adolescent development and include the promotion of peer acceptance and the establishment of autonomy. He suggested that the term "risk-taking" should only be used to describe behaviors for which there is a conscious awareness of the risk or danger involved and a deliberate seeking for the thrill that issues from the uncertainty of beating the odds.

Jessor also addressed the issue of whether risk behaviors vary between individuals so that they cluster or form a risk behavior syndrome; that is, are there specific behaviors that go together to suggest a young person is at greater risk of continued risk-taking? He concluded that the empirical evidence supports the existence of organized patterns of adolescent risk behaviors. In an earlier study, it was found that the same underlying risk factors could account for an adolescent being involved in alcohol misuse, marijuana use, delinquency, or sexual precocity (Donovan & Jessor, 1985).

DECISION MAKING

Assessment of risk has long been the focus of a large body of literature dealing with decision making and judgments made in uncertain

situations. More recently, risk assessment has been used to help us understand adolescent risk-taking. Decision theory suggests that the decision to engage in risk behavior is rational if that decision reflects the values and beliefs of the decision maker (Beyth-Marom et al., 1993). Thus individuals can make different decisions because they have different values and beliefs. Adolescents may engage in more risk behaviors than adults do because they place different values on the outcomes and consequences.

Decision theory outlines five steps to be taken in making a rational decision: (1) identify possible options; (2) identify possible consequences ensuing from each option; (3) evaluate the desirability of each consequence; (4) make an assessment of the likelihood of each consequence occurring; and (5) combine these steps according to a logical decision rule (Beyth-Marom et al., 1993). Using the structure of decision theory, some researchers have tested previously accepted opinions that adolescents show poorer decision-making skills than adults do.

EMPIRICAL STUDIES

Decision-making theory suggests that adolescents who undertake risk behaviors do so because they believe that the benefits of the behavior outweigh the risks and negative consequences. Lavery et al. (1993) conducted a study with a group of adolescents who had been referred to a community counseling clinic for a range of problems including truancy, running away, delinquency, depression, and family conflict. The goal of the study was to assess the relationship between risk involvement and problem behavior personality and to examine the role of adolescent egocentrism in risk-taking. They found that egocentric adolescents engaged in no more risk-taking behavior than other adolescents and that they were equally able to assess the risks of a given situation. Adolescents who were involved in high levels of risk behavior were more likely to have a conduct disorder or to

be delinquent. These findings add support to the problem behavior theory of risk-taking proposed by Jessor and Jessor (1975). The adolescents who engaged in risk behaviors perceived the benefits of those behaviors more positively, which also offers some support for a decision-making model of risk-taking.

Some researchers question whether adolescents are able to judge which behaviors are risky and how well they are able to assess the outcomes of those behaviors. A study that explored these questions asked adolescents to nominate four behaviors that they considered risky and to rate their positive and negative thoughts about each behavior (Moore & Gullone, 1996). The results indicated that these adolescents nominated very similar risk behaviors to those considered socially as risky. The behaviors included criminal activity, drug use, alcohol use, dangerous driving, unprotected sexual activity, and so on. The adolescents were capable of generating both positive and negative outcomes of the behaviors, indicating that they were well aware of the risks involved in the behaviors. Although the authors concluded that the adolescents did not have a clear or coherent reason for engaging in the risk activities other than a very broad category of "pleasure," increased peer acceptance was rated as a significant positive outcome associated with smoking. This study found that adolescents tend to focus on the positive outcomes when making a decision about engaging in risk behaviors.

There are six commonly held beliefs about the decision-making capabilities of adolescents: Adolescents are not capable of competent decision making; adolescents take more risks than adults; adolescents do not sufficiently consider consequences; adolescents think that they are invulnerable; adolescents let emotions rule their choices; adolescents rely heavily on peer information and attitudes when making decisions about risk behavior. Furby and Beyth-Marom (1992) reviewed the literature on the role of these beliefs in adolescent decision making. They concluded that there is a lack of

empirical evidence on the issue of adolescent risk-taking and that this reflects the dearth of information about how adolescents perceive the options and possible consequences that they face. Questions that have to be addressed include which options adolescents consider, how well they assess the probability of the possible consequences, and how important those consequences are to them.

It is often suggested that adolescents indulge in risk behavior because they believe they are invulnerable to negative outcomes. Beyth-Marom et al. (1993) used decision theory to compare the ability of adolescents and adults to anticipate the possible consequences of risk behavior. The results did not support the idea that adolescents feel invulnerable. The adolescents in this study generated very similar consequences to those of the adults.

Other studies by this group of researchers have found that adolescents are capable of evaluating the negative outcomes of risk behaviors. Quadrel, Fischhoff, and Davis (1993) found that both adults and adolescents use slightly biased decision-making processes in estimating the likelihood of risk and that it was adults rather than adolescents who saw themselves as less at risk than others. When adults and adolescents were asked what they knew about specified risk behaviors, they gave very similar responses. These results indicate little support for the theory put forward by Arnett (1992) that explains adolescent risk-taking in terms of developmental shortcomings. The results also indicate a need to examine why adolescents continue to engage in risk behaviors when it appears that they are aware of the negative consequences and do recognize that they are as likely as anyone else to suffer from them.

On the other hand, the literature on teenage pregnancy and contraception suggests that adolescents who become pregnant have difficulty engaging in formal operational reasoning (Gordon, 1990). Formal operational reasoning involves generating or envisioning alternatives, engaging in perspective taking, evaluating alternatives,

and reasoning about chance and probability. Namerow, Lawton, and Philliber (1987) found that adolescents were poor at assessing the probability of getting pregnant, and that the contraceptive decisions of these adolescents were more closely related to the perceived risk of pregnancy than to actual risks. However, even Arnett (1992) concedes that it is now widely accepted that not all adults are able to use formal operational reasoning and those who can use it do not do so all of the time.

These studies tend to reflect support for the problem behavior theory of Jessor (1992) that risk-taking behavior is an interaction between psychological and social variables and that individuals tend to engage in a number of risk behaviors rather than just one. The results of these studies also suggest that adolescents are aware of the consequences of engaging in these behaviors, do not show a sense of invulnerability, and in general do not show a more deficient decision-making style than adults. If this is the case, we are still left with the question of why they continue to engage in risk behaviors. The perspective of behavioral decision theory as outlined in the previous section would seem to be a useful paradigm within which to address this question. It is also important to find out if adolescents in clinical populations (depressed, conduct disordered, and suicidal adolescents) are as capable of generating consequences for risk behaviors as are normal adolescents.

The theory proposed by Jessor describes situational factors as playing an important role in the decision to engage in risk behaviors. These factors, including both family and environmental influences, are the same as those we have shown to be predisposing factors to adolescent suicidal behavior. The risk factors and predisposing variables associated with suicidal behaviors also occur in the backgrounds of young people who engage in risk-taking behaviors.

6 Risk and Predisposing Factors in Adolescent Risk-Taking

The studies outlined later in the book refer to adolescents who are described as exhibiting problem behaviors or conduct disorder. Adolescents with these problems invariably engage in higher than normal levels of risk-taking. We examine the factors that predispose these adolescents to risk-taking.

Environmental Variables

FAMILY DYSFUNCTION

If adolescents feel supported by their families, they are less likely to engage in risk-taking behavior. A study that looked at perceived quality of support found that adolescents with either emotional or behavioral problems were four times more likely to report a lack of family support than students without these problems (Garnefski & Diekstra, 1997). Those adolescents with both emotional and behavioral problems were eight times as likely to feel unsupported by their families. Students who indicated a lack of support from more than one system (family, school, or peers) were also likely to have more problems.

These results suggest that similar background problems and family risk factors are involved in the development of both emotional and behavioral problems. These factors may include family dysfunction and real or perceived life stressors.

The development of problem behavior has been linked with the same background factors as suicidal behavior (see Chapter 3). A study into family risk factors for adolescent suicide concluded that family dysfunction is likely to be a nonspecific risk factor for the development of psychopathology in children (Wagner, 1997). Wagner's review article suggests that various family experiences such as divorce or separation, parental depression, and abuse are risk factors for a broad spectrum of child behavior problems and psychiatric disorders. Research on specific child and adolescent disorders has also found striking similarities in risk factors across disorders.

Consistent, emotionally positive, and supportive family relationships may act as a protective factor against risk-taking behavior. A longitudinal study, which assessed the impact of family factors on adolescent risk-taking behaviors, concluded that adolescents were more likely to become involved in risk activities if they came from loose-knit families with poor problem-solving skills (Fisher & Feldman, 1998). These adolescents are more likely to be influenced by friends and other adults than by their families.

PEER INFLUENCE

Peer influence contributes to adolescent risk-taking behavior. It has been found that members of a peer group exhibit similar behaviors at a similar rate (Donovan, Jessor, & Jessor, 1983). There is, however, a strong family factor in the way that an adolescent becomes susceptible to peer influence. The more time that adolescents spend with their parents, the less they are influenced by their peers (Kandel & Andrews, 1987). Parents also have more influence over an adolescent's decision to engage in risk behaviors than peers, but peers

have more influence over the continuation of risk-taking behaviors (Tremblay et al., 1995). Other studies have suggested that coercive family relations and poor parental monitoring allow adolescents to form associations with risk-taking peer groups (Patterson & Bank, 1989; Patterson & Dishion, 1985; Patterson, Reid, & Dishion, 1992).

These studies suggest that environmental factors, either family or peer group but most likely a complex interaction of both, provide part of the explanation for the progression toward serious and continued risk-taking behavior by adolescents. However, there is no simple explanation or single model to illustrate the reasons for these behaviors. As with suicidal behavior, it is necessary to look further and explore other variables that interact with environmental influences to more clearly explain the increasing incidence of adolescent risk-taking. Certainly, once an adolescent is found to be regularly engaging in risk-taking behaviors, the issue of peer influence should be considered; for this reason peer influence is a variable that should be included in any model of adolescent risk-taking.

Intrinsic Factors

GENDER

Some recent studies challenge the popularly held belief that males engage in more risk-taking behaviors than females. Shapiro et al. (1998) found that older females (17–21 years) reported engaging in very similar risk behaviors and at similar rates to males. The authors concluded that the results supported the suggestion that females drink, smoke, and engage in behaviors such as drinking and driving at high speed as frequently as males. They also found that these adolescents were able to give reasons for their risk-taking and suggested that this finding was contrary to the widely held belief that risk-taking is "mindless" or merely "sensation seeking."

FAMILY HISTORY OF PSYCHIATRIC ILLNESS

The links between parental and adolescent psychological disorders suggest that these problems are transmitted through environmental factors (Brent, 1995). Several studies have indicated that a father's criminal history increases the risk of aggressive and delinquent behavior in adolescent males (Gould et al., 1998). This in turn is likely to indicate a higher than normal level of risk-taking behavior.

EXPERIENCES OF ABUSE AS A CHILD

The study by Silverman et al. (1996) indicated that children who have suffered either physical or sexual abuse were at risk for developing a range of pathologies, including antisocial behavior and drug abuse or dependence. Garnefski and Diekstra (1997) looked at gender differences in adolescents who had suffered childhood sexual abuse. They found that the pattern of problem behaviors exhibited by sexually abused boys was different from the pattern exhibited by girls. Sexually abused boys were more likely to exhibit multiple problems, and these were likely to include aggressive or criminal behavior and addiction-risk behavior as well as increased suicidality.

GENETIC PREDISPOSITION

Frick and Jackson (1993) suggested that a predisposition to antisocial behavior is genetically transmitted from parent to child. They suggested that this predisposition in the parent leads to dysfunctional family environments, and that this predisposition in the child leads to antisocial behavior. They further suggested that this model explains the link between family factors and childhood and adolescent antisocial behavior. In support of their model, the authors reviewed literature to indicate the intergenerational links in antisocial behaviors found in adoption and twin studies of children referred for conduct problems.

In a study of adopted children, it was found that 30% of biological mothers and fathers of the children referred for conduct problems were diagnosed with antisocial personality disorder; this is a similar rate to that found in family history studies (35% to 46% across studies). None of the adoptive parents with conduct disordered children had antisocial disorder. This suggests that the problem is more one of genetics rather than of problem parenting (Jarey & Stewart, 1985).

SEXUALITY

Lesbian, gay and bisexual (LGB) youths have been identified as showing significantly higher participation in health risk behaviors than heterosexual youths. Rosario, Hunter, and Gwadz (1997) found that 93% of LGB females and 89% of males from a sample recruited from New York City gay-focused organizations reported having used an illegal or illicit substance. Sixty-seven percent of females and 59% of males reported the use of an illicit drug. Hallucinogens, inhalants, and cocaine had been sampled by at least one in five LGB youths. Only 26% of females and 8% of males reported using a psychotherapeutic drug. Since Rosario et al. found that the lifetime prevalence rate was higher than that reported by national samples of presumably heterosexual youths (6.4:1 for females and 4.4:1 for males), they concluded that LGB youths were at risk for substance abuse. Self-identifying LGB youths showed a higher proportionate risk for suicide, victimization, sexual risk behaviors, and multiple substance use. LGB youths were more likely to report engaging in and initiating risk behaviors at an earlier age than their peers (Faulkner & Cranston, 1998; Garofalo et al., 1998).

These differences in health risks among LGB youths were probably mediated by victimization at school: Combined LGB status with high at-school victimization resulted in the highest levels of health risk behaviors. LGB youths demonstrated higher levels of substance

use, suicidality, and sexual risk behaviors than their victimized heterosexual peers. The levels of these behaviors for LGB youths reporting low levels of victimization were approximately equal to their heterosexual peers (Bontempo & D'Augelli, 2002).

It is apparent that the type of pathology a young person develops (depression, conduct problems, or substance abuse) and the type of behavior exhibited (suicidal, aggressive, or risk-taking) depends on a complex interaction of both individual and environmental factors. It seems fair to say, however, that remarkably similar factors can lead to different forms of pathology and different forms of behavior.

Psychiatric Correlates of Adolescent Risk-Taking

SUBSTANCE ABUSE

Both suicidal and risk-taking behaviors are commonly associated with alcohol and drug use. However, risk-taking is more likely to be associated with substance abuse than with an affective disorder (Clark et al., 1990).

Many adolescents use alcohol in response to unpleasant emotions such as anger, depression, and loneliness. A study of adolescent psychiatric patients who engaged in risk behaviors when drunk found that these subjects later regretted their actions. The adolescents who reported the greatest alcohol-related problems believed that alcohol would improve their social abilities. These adolescents continued to believe that alcohol improved their social behavior despite also reporting frequent problems with parents, friends, and girlfriends or boyfriends when they were drinking (McKay et al., 1992).

Adolescent drug use may interfere with the development of protective factors such as effective coping strategies and social skills that normally assist in effective functioning. A longitudinal study that examined the impact of adolescent drug use found that it

increased delinquency at each of the developmental stages for both male and female participants (Brook et al., 1996). This suggests that drug abuse can have short- and long-term influences on the development of criminal behaviors. This supports the findings of Stacy and Newcomb (1995) that drug use in adolescence is a significant predictor of adult criminality.

CONDUCT DISORDER

Among the general population of adolescents, the prevalence of conduct disorder using DSM-IV criteria is about 2.4% (males 3.8% and females 1%) according to the survey of the Mental Health and Wellbeing of Australians (Sawyer et al., 2000). Delinquent behavior occurred among 6.2% of adolescents (males 6.4% and females 5.9%). Many risk-taking behaviors incorporate a measure of illegality such as drinking alcohol and driving at high speed, stealing cars and joyriding, vandalizing, shoplifting, physically aggressive behavior, and so on. It is, therefore, not surprising that an overlap exists between the youths apprehended for these behaviors and those diagnosed as conduct disordered or described as delinquent. Naturally, not all of the youths engaged in risk-taking behaviors have received a diagnosis of conduct disorder. This is largely because the services that they are likely to encounter are justice and welfare services rather than health services.

The criteria for a diagnosis of conduct disorder (DSM-IV, 1994) require that a degree of severity be met. The pattern of behavior must be ongoing and must impair the young person's ability to function effectively at school, at home, in the community, or at work. Aggressive behaviors, directed toward other people or animals, are included. The young person may, for example, engage in bullying or threatening behavior, physical intimidation, use of a weapon, cruelty to people or animals, coercion including sexual coercion, or direct confrontation while attempting theft. Other classes of behavior

involving destruction of property may occur. Acts of deceitfulness and theft are included. In more general terms, young people with conduct disorder frequently violate rules such as being absent from school, running away from home, ignoring parental restrictions, and so on.

In summary, we know that adolescents with a diagnosis of substance abuse or conduct disorder comorbid with a diagnosis of depression are at increased risk of suicidal behavior. However, many of the young people engaged in serious delinquent or risk-taking behavior may not be assessed for depression, and therefore their increased suicidal risk is not considered.

7 Adolescent Risk-Taking: Cognitive Variables

Problem Solving

The literature pertaining to the problem-solving capacity of adolescents is generally focused on conduct disordered or delinquent populations. As stated previously, there is considerable overlap between adolescents who engage in risk-taking behavior and those who have been diagnosed with conduct disorder or termed delinquent. It is therefore fair to assume, for the purposes of this book, that the majority of adolescents included within these populations would also engage in risk behaviors.

Many aggressive adolescents and those with a conduct disorder demonstrate problem-solving deficits. Lochman and Lampron (1986) were interested in the problem-solving characteristics of aggressive and nonaggressive boys. They used means–ends stories containing a problematic interpersonal situation and a conclusion in which the problem no longer existed. The children were asked to provide the middle of the story and later to give any alternative solutions they could generate. The aggressive boys generated fewer verbally assertive

solutions to problems, instead showing a preference for actively aggressive solutions.

Social goals may vary in different adolescents. Aggressive adolescents might value control and hostility but place a low value on their interactions with peers and their feelings about those peers. Lochman, Wayland, and White (1993) conducted a study in which they examined the relationship between social goals such as dominance, revenge, avoidance, and affiliation in terms of social problem solving. They found that the boys who valued dominance and revenge had little regard for affiliation. They also had a wide range of delinquent, substance, and behavioral difficulties. They found that the social goals of aggressive adolescents were clearly different from those of their nonaggressive peers.

Social problem solving is the ability to overcome difficulties in the formation and maintenance of social relationships. Adolescents with conduct problems show poorer social problem-solving ability than both depressed and normal control adolescents. Joffe et al. (1990) found that adolescents with conduct disorder had problems with generating the relevant steps to a social goal. They had difficulties with anticipating obstacles to be dealt with in the pursuit of a social goal, and they were much less capable of coming up with assertive verbal responses in difficult social situations. The authors suggest that these adolescents do not perceive obstacles to their solutions. Taken in conjunction with the finding that boys with a conduct disorder are more likely to act aggressively when they act impulsively (Dodge & Newman, 1981), it is conceivable that these boys become frustrated when they encounter obstacles. If they are not able to generate and consider other responses, then aggressive acting-out behavior may appear to be the only option.

It has been suggested that although depressed young people and those with conduct disorder both suffer from interpersonal problem-solving deficits, these deficits are different at different ages.

Aggressive and depressed children exhibit problems at all stages of information processing in social situations, and both groups tend to distort the meaning of what they see and hear (Dodge, 1993). Aggressive adolescents attend to supposedly hostile acts directed toward them (often leading to hostile attributions and retaliatory aggression). Depressed adolescents attend to failure, loss, and negative self-reference (Dodge & Newman, 1981).

It has also been found that both aggressive and depressed adolescents have a reduced ability to understand the emotions or reasoning of other people (i.e., perspective taking). This means that these adolescents often misunderstand the intentions of others and are likely to infer hostile intent. This effect is known as "hostile attributional bias" in many studies (Dodge et al., 1990). However, whereas the aggressive adolescents retaliate with aggression to the perceived hostility of others, the depressed adolescents blame themselves. Once the adolescents have developed a mental picture of a situation, they then consider possible behavioral responses. With increasing age, aggressive adolescents may come to generate as many responses as their nonaggressive peers, but the quality of those responses are poor. Aggressive adolescents are more likely to generate responses that are verbally coercive, physically aggressive, or irrelevant to the task or situation.

There is a discrepancy in the literature between problem-solving deficits and problem-solving distortions. A deficit implies the lack of a skill, for example in the number or relevance of solutions generated. A distortion refers to a misperception or misappraisal, such as underestimating one's problem-solving ability or attributing hostile intentions when none exist.

A study by Pont (1995) showed that adolescents with emotional and behavioral problems were able to generate a similar number of solutions to adolescents without these problems, but that the quality of their solutions was poorer. The problem group showed evidence

of impulsivity and a lack of clear planning, and their solutions were more aggressive and problematic than those of adolescents without emotional and behavioral problems. These results indicated that there were both deficits and distortions occurring in the problem-solving approaches of this sample of boys.

These findings suggest that it is important to access information about deficits as well as distortions, and we address this in the studies reported in this book by using several different measures of problem solving. It is also important that we assess the quality of solutions (relevant versus irrelevant), since allowing any solution irrespective of usefulness to be counted does not give a meaningful indication of the adolescent's problem-solving ability.

Hopelessness

Children and adolescents with high levels of hopelessness display a defiant attitude, are hurtful to themselves and others, and exhibit socially inappropriate behaviors. They are more likely to express anger openly and aggressively and perceive their families as unsupportive. They are also more likely to experience a range of negative emotions including shame, fear, guilt, and hostility. These young people are likely to engage in socially inappropriate behaviors and are more likely to break the law (Kashani et al., 1997).

Adolescents who engage in antisocial behaviors generally come to the attention of the authorities at some stage. Since legal and disciplinary problems are one of the major life events reported by suicidal adolescents, it is important to be aware that many of these young people may also be experiencing high levels of hopelessness. Adolescents with a diagnosis of depression and adolescents with a diagnosis of conduct disorder report similar levels of depression and hopelessness (Kempton et al., 1994). Therefore, clinicians faced with

an adolescent diagnosis of conduct disorder should check for the presence of both depression and hopelessness.

Protective Factors

Protective factors decrease the likelihood of an adolescent engaging in problem behaviors, while risk factors increase the likelihood of these behaviors occurring. Jessor et al. (1995) identified seven protective factors: positive orientation to school; positive orientation to health; intolerant attitude to deviance; positive relations with adults; perception of strong social controls or sanctions for transgressions; awareness of friends who model conventional behavior; and actual involvement in prosocial behavior. They also identified six risk factors: low expectations for success; low self-esteem; a general sense of hopelessness about life; awareness of friends who model involvement in problem behaviors; a greater orientation toward friends than parents; and poor school achievement or school dropout.

These psychosocial protective factors appear to play both a direct role and a moderating role in problem behavior. Adolescents with high protection scores exhibited fewer problem behaviors. The protective factors reduced problem behaviors even if the adolescent was exposed to a number of risk factors. This is an important finding that demonstrates the similarity of the role of protective factors in both problem behavior and suicidal behavior (Jessor et al., 1995).

The Effects of Alcohol and Stress on Problem Solving and Decision Making

The review of substance abuse in Chapter 6 indicates the important role that alcohol plays in risk-taking behaviors. What is still unknown

is the role that alcohol might play in decreasing an adolescent's ability to engage in effective problem solving and decision making. The studies reviewed indicate that conduct disordered and delinquent adolescents are likely to exhibit problem-solving deficits. A question of interest is whether this deficit is likely to be exacerbated by alcohol consumption.

The discussion of the relationship of alcohol and suicide also indicates that it is an important variable to be considered with the suicidal population. Once again the literature indicates that these adolescents exhibit problem-solving deficits. Are these deficits also likely to be exacerbated by alcohol consumption? It is considered important to include the role of alcohol in a model of suicidal and risk-taking behavior and to endeavor to assess the effects of alcohol on problem solving and decision making.

A second variable clearly important in adolescent suicide is stress. An extensive body of literature indicates that a stressful situation, usually interpersonal loss or conflict or a disciplinary crisis, often precedes suicide. Young people engaged in risk-taking who are in trouble with the law are also more likely to have experienced interpersonal loss or conflict and disciplinary crises. The question of interest is the effect of stress on the adolescent's ability to engage in effective problem solving and decision making. Once again it is important to include the role of stress in a model of adolescent suicidal and risk-taking behavior.

A PILOT STUDY

A preliminary study using university undergraduates was conducted to evaluate the effect of alcohol and stress on problem solving and decision making (Sofronoff, 1999). Student volunteers were randomly allocated to one of four conditions: alcohol, stress, alcohol plus stress, and a comparison group. Under these conditions, the students

completed self-report measures of problem solving and decision making.

Results indicated that those students in the two alcohol groups performed at a significantly lower standard on the problem-solving measures than the comparison group. Specifically, they produced more irrelevant and aggressive responses to problem situations. These students also indicated that they would engage in significantly more risk activities than the comparison group. The participants in the stress condition also produced fewer relevant solutions to problems, showed a less positive attitude toward problem solving, indicated they would engage in more risk activities, and showed a level of underconfidence in their knowledge of risk activities.

Tentative conclusions drawn from these findings suggest that both alcohol and stress do have a deleterious effect on problem solving and decision making. Since we found this effect with highly functioning university students, it does not seem unreasonable to suggest that similar effects would occur with those adolescents already showing deficits in problem solving and decision making.

An Overlap Between Suicidal and Risk-Taking Adolescents

One study, which looked for predictors of suicidal behavior in adolescents who had a current or past diagnosis of major depressive disorder, found that conduct problems were a stronger predictor of suicidality than depression. Those adolescents who had both depression and a conduct disorder were at the greatest risk for suicidal behavior (Myers et al., 1991). A further illustration of the high risk factor of this combination of disorders is the increasing incidence of death in custody among young offenders. Bearing this in mind, we find it

becomes more important to include this risk-taking population in a study of adolescent suicide.

Many adolescents exhibit risk-taking behaviors more clearly than they exhibit the classic symptoms of depression or suicidal ideation. Woods et al. (1997) suggested that a suicide attempt would be associated with other risk and problem behaviors. They compared 288 adolescents who reported having made a suicide attempt. The results indicated that there were significant relationships between a suicide attempt and female gender, poor class standing, lack of seat belt and helmet use, and multiple substance use, including substance use before driving and use before sexual activity. Suicide attempts were also associated with histories of fighting, gun use, sexually transmitted diseases, and same-gender sexual experiences. The strongest relationships included cigarette use, alcohol use, marijuana use, other drug use, aggressive behavior, substance use before sexual activity, and carrying a gun. This study supports the suggestion that risk-taking and problem behaviors as defined by Jessor (see Chapter 5) are related to suicide attempts.

Rohde, Mace, and Seeley (1997) conducted a study to evaluate the correlates of suicidal behavior in a population of adolescents in a juvenile detention center. They pointed out that the adolescents in question were considered delinquent and that this term is a legal term used to describe a child or adolescent who has committed a criminal offense. They went on to point out that the term also overlaps considerably with the psychiatric diagnosis of conduct disorder. Once again, the population being described includes those adolescents considered as risk takers.

The results indicated a higher rate of suicide attempts and suicidal ideation among adolescent risk takers. Rates of suicidal behavior were particularly high among the girls, with 50% reporting suicidal ideation and 40% reporting a past suicide attempt. The authors concluded that overall this population (both male and female) has

rates of suicidal behavior comparable with psychiatric inpatients, and they suggested that psychiatric care should be delivered accordingly. These findings are very similar to those of Kosky, Sawyer, and Gowland (1990), who found that youths in a detention center had significantly higher rates of depression than a community sample did.

Conclusions

While there are a number of theories about why adolescents engage in risk-taking behavior, it is not usually suggested that they are engaging in a form of suicidal behavior. However, the major correlates of this type of behavior suggest they are likely to be at risk of suicide. The combination of substance abuse, conduct disorder, and cognitive deficits such as problem solving, hopelessness, possible faulty decision making, and a lack of protective factors may simply carry these adolescents to the same end by a different path.

While one group of adolescents presents with internalizing symptoms such as depression, the other group, who may also be depressed, exhibits externalizing behaviors such as recklessness, aggressiveness, or risk behaviors. Risk behaviors may precede later suicidal behavior or be part of a suicidal behavior complex.

It would seem warranted to compare this group of adolescents with the depressed and suicidal adolescents in an attempt to clarify the extent of their similarities and differences.

It is our intention, with the studies presented in this book, to access six different groups of adolescents. They include the following:

- **Depressed adolescents** (depressed group)
- **Adolescents engaged in minor problem behaviors, including school or family problems, truancy, and alcohol and drug use, with no legal ramifications** (problem behavior group)

- **Adolescents who have attempted suicide and have been hospitalized** (suicide group)
- **Adolescents who have engaged in risk-taking behaviors that have resulted in legal consequences** (risk-taking group)
- **Adolescents who have attempted suicide and have also engaged in risk-taking behaviors** (suicide and risk-taking combined group)
- **Adolescents with no history of depression, conduct problems, substance use problems, risk-taking, or suicide attempts** (comparison group)

Following the literature review presented in preceding chapters, there are some additions to be made to the first stage of the suicide model briefly outlined at the end of Chapter 4. It was decided to include both conduct problems and substance use problems under the single group of problem behaviors as suggested by Jessor (1992). The work of the decision theorists also provides a useful paradigm within which to access information about the decision-making ability and attitude toward risk of both risk takers and suicidal adolescents. It is hypothesized that decision making may be a mediator between problem behaviors and serious risk-taking and suicidal behavior.

As illustrated, problem solving, hopelessness, protective factors, and decision making are the four constructs that may mediate between psychopathology (depression, conduct disorder, and substance abuse) and suicidal or risk-taking behavior. The operationalization of these constructs and the actual measures to be used are fully outlined in Chapter 9.

A MODEL OF SUICIDE AND RISK-TAKING

8 An Integrated Model of Suicide and Risk-Taking

Introduction

This integrative chapter aims to present the Suicide and Risk-Taking (S/RT) model developed from our review of the extant literature and to provide the theoretical basis for that model. The chapter begins with a review of how the model was derived, an explanation of how it differs from a similar model proposed in the literature, and an outline of the component parts of the model. We then briefly revisit the literature concerned with the major factors associated with suicide and risk-taking included in the model in order to provide a rationale for the structure of the model. The chapter proceeds to outline a theoretical framework to explain the way in which the proposed mediating variables, problem solving, hopelessness, protective factors, and decision making are hypothesized to work in suicidal and risk-taking behaviors.

An Earlier Model

In a review article, Yang and Clum (1996) suggested that early environmental factors are linked to suicidal behavior by means of the mediating influence of cognitive factors. In order to reach their conclusion, Yang and Clum examined evidence from other studies to show links between (a) cognitive deficits and suicidal behavior, (b) early environmental factors and cognitive deficits, and (c) early environmental factors and suicidal behavior. They proposed the model of suicidal behavior shown as Figure 8.1.

This model proposes that early negative life events form a background to suicidal behavior, but the exhibition of this behavior is determined by several cognitive factors acting as mediators. These factors include low self-esteem, external locus of control, field dependence, poor problem-solving skills, and hopelessness.

Our S/RT model (Figure 8.2) differs from that put forward by Yang and Clum (1996) in several ways. It draws from two bodies of literature, both the literature of adolescent suicide and the literature of adolescent risk-taking behavior. We have tried to take into consideration a progression from early environmental risk factors to psychopathology, either in the form of depressive symptomatology or, alternatively, behavior problems and substance abuse problems. In order to understand the development of these problem behaviors in individuals, we propose a S/RT model whereby cognitive factors (problem solving, hopelessness, deficits in protective factors, and decision making) mediate between psychopathology and suicidal or risk-taking behavior rather than the usual understanding that links environmental factors directly to suicidal or risk-taking behaviors.

We have also taken into account the fact that environmental factors predispose individuals to psychopathology (depression and

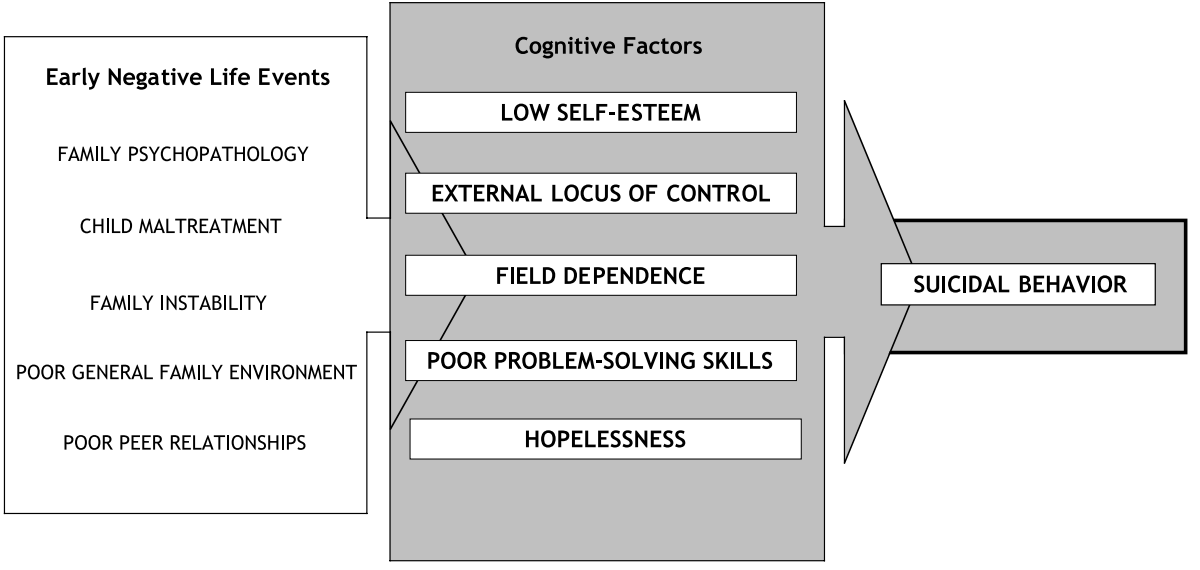


Figure 8.1. A proposed model of suicidal behavior (Yang & Clum, 1996).

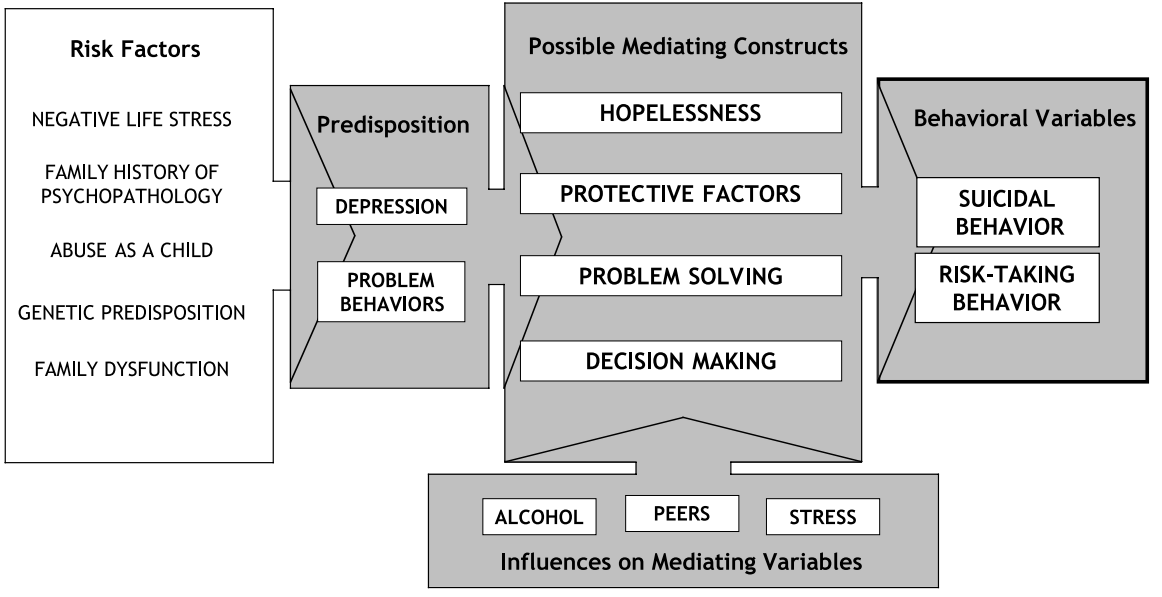


Figure 8.2. A model of suicidal and risk-taking behaviors.

problem behaviors). However, the psychopathology is then linked to suicidal and risk-taking behavior by means of the mediating influence of cognitive factors.

The literature reviewed in earlier chapters examined environmental and individual factors found to be related to suicidal behavior, and it reviewed environmental and individual factors found to be related to risk-taking behaviors. This review led to the conclusion that these risk factors occur as forerunners to psychopathology or in the context of current psychopathology.

The earlier literature reviews also examined links between psychopathology and suicidal or risk-taking behaviors. The links between psychopathology and cognitive deficits and between cognitive deficits and suicidal and risk-taking behavior were reviewed. Links included in the model are covered in the preceding literature reviews. Therefore, although interacting background factors may predispose an individual to develop psychopathology, it seems more likely that it is the nature of the psychopathology that predisposes that individual to suicidal behaviors or risk-taking behaviors.

The S/RT Model

The S/RT model (Figure 8.2) starts with the antecedent variables or risk factors that feature in the backgrounds of many adolescents who later engage in either suicidal or risk-taking behaviors. These variables include negative life stress, family conflict, abuse as a child, family psychopathology, genetic predisposition, and gender. The S/RT model suggests that these risk factors and environmental or individual variables create a vulnerability for these young people to develop psychopathology such as depression, conduct problems, and substance abuse problems.

The central section of the S/RT model proposes that adolescents with these psychopathologies show increased evidence of particular cognitive deficits. Problem-solving deficits, hopelessness, fewer protective factors, and poor or impulsive decision-making are proposed as possible mediating variables. The central section of the S/RT model also suggests that these deficits may be exacerbated by alcohol or drug use and by current stressful events. Problem behaviors and risk-taking behaviors may also be affected by peer influence. The S/RT model proposes, therefore, that problem solving, hopelessness, protective factors, and decision making are cognitive constructs that are possible mediating variables among depressive symptoms, conduct problems, substance abuse, and the behavioral outcomes of risk-taking and suicidal behaviors.

In addition to testing whether or not the identified cognitive variables do function as mediators between psychopathology and the negative behavioral outcomes (suicide and risk-taking), we also examine why some adolescents continue to make risk decisions and continue to engage in risk-taking behaviors over time. We look at the reasoning processes associated with decision making across different groups of adolescents, using the decision theory paradigm to assess decision making in risk situations. We were interested in whether these young people appreciated the risks involved in their actions. If they did, as Furby and Beyth-Marom (1992) and Quadrel et al. (1993) have suggested, why did they decide to keep taking those risks?

A Rationale for the S/RT Model

RISK FACTORS FOR SUICIDE AND RISK-TAKING

Many of the reviewed studies revealed common factors in the backgrounds of adolescents presenting with different problems, including depression, conduct problems, suicidal behaviors, and risk-taking

behaviors. These factors include negative life stress (de Wilde et al., 1992; Marttunen et al., 1994, 1995; Tarrant & Woon, 1995), abuse as a child (Brent, 1995; de Wilde et al., 1992; Silverman et al., 1996), family history of psychopathology (Brent et al., 1993b; Brent, 1995; Kosky et al., 1990a; Tarrant & Woon, 1995), family dysfunction (Adams, Overholser, & Lehnert, 1994; Kosky et al., 1990b), and genetic predisposition (Brent et al., 1996; Frick & Jackson, 1993). A significant effect of gender has been found. More females than males report depressive symptomatology, and more males than females report conduct problems (Craighead, 1991; King et al., 1993; Kovacs et al., 1993; Lewinsohn et al., 1993). More females attempt suicide and more males complete suicide (Lewinsohn et al., 1996; Ohberg et al., 1996).

PSYCHOPATHOLOGY, SUICIDE, AND RISK-TAKING

The link between depression and suicide is well established (see Chapter 3). However, the alternative link to suicidal behavior by means of conduct disorder and substance abuse is also becoming increasingly well documented (see Chapter 3). Many recent studies have found that almost all cases of suicide and suicide attempts show previous psychopathology (Lewinsohn et al., 1996). It has also been suggested that other risk-taking behaviors such as smoking, engaging in physical fights, not using a seat belt, and carrying a weapon are also likely to be associated with suicidal behaviors (Kann et al., 1996; Woods et al., 1997). Moreover, these behaviors are also likely to be associated with psychopathology.

MEDIATING VARIABLES, SUICIDE, AND RISK-TAKING

Our earlier survey of the literature has identified several possible factors that could mediate between psychopathology and suicidal or risk-taking behaviors. These factors may determine the particular outcome in individual cases (see Chapter 4 and Chapter 7). Several

studies support the suggestion that a possible mediating variable may be problem solving. It is possible that problem solving may be useful in differentiating among depressed adolescents, those with conduct problems, and normal adolescents (Dodge, 1993; Joffe et al., 1990; Rotheram-Borus et al., 1990; Sadowski & Kelley, 1993; Schotte & Clum, 1987; Slaby & Guerra, 1988). Hopelessness has been suggested as a mediating variable between current stress and suicidal behavior in an adult sample (Rudd et al., 1994). The decision theory paradigm attempts to explain how adolescents engaging in risk behaviors make their decisions. In this sense, decision making must be considered a potential mediating schema (Beyth-Marom et al., 1993; Furby & Beyth-Marom, 1992). The availability of working protective factors for suicidal behaviors and for risk-taking also represents a potential mediating factor (Jessor, 1992; Linehan et al., 1983). Our research aimed to elucidate the roles of these potential or likely variables in either suicide or risk-taking. There could be different mediators for different populations of at-risk adolescents.

It was also necessary to assess the problem-solving and decision-making factors in conjunction with other variables likely to influence them – peer pressure, alcohol use, and current stress. Alcohol use and current stress are commonly identified as contributing to suicidal and risk-taking behaviors. Peer influence can be seen as a contributing factor in many instances of risk-taking, but it could also be a factor in suicidal behavior as has been suggested following the deaths of certain popular entertainers. There were reports of suicides by fans following the death of silent-film star Rudolph Valentino in the 1920s (Murphy, 1996). In 1994, mental health professionals feared an eruption of copy cat suicides following the suicide of grunge idol Kurt Cobain. As such, the media were encouraged to refrain from sensationalised reporting of the event and state and national health services were emphatically publicized (Jobes et al., 1996). Cluster suicides in Plano, Texas in the mid-80s clearly illustrated

the combined effect of media sensation and peer-influence (Phillips, 1986).

Problem-Solving and Decision-Making Deficits in Suicidal Behavior

The literature reviewed in earlier chapters found very little in the way of theoretical explanation for the role of mediating variables in the suicidal trajectory. A major source of interest in our research, however, is the impact of strong emotion or affect on the suggested mediating variables of problem-solving and decision-making abilities. It has been found that emotional states, both positive and negative, can affect a diverse array of decision and problem-solving tasks. To date, the majority of studies have focused on positive mood influences (Isen & Geva, 1987; Isen & Means, 1983; Lewinsohn & Mano, 1991). However, several researchers have concentrated their efforts on the effects of depression and negative affect on problem solving and decision making (Conway & Giannopoulos, 1993; Hartlage et al., 1993; Hertel & Rude, 1991; Ingram, 1990; Mano, 1992; Wright & Bower, 1992). From this research, two competing theories have arisen to explain the reason for the apparent and consistent deficits found in memory and problem-solving among these subjects.

COGNITIVE CAPACITY

Several research groups have suggested that depression somehow causes a reduction in the cognitive capacity an individual has to work with. This hypothesis was first introduced by Hasher and Zacks (1979). It was later refined to suggest that the extent of capacity reduction is directly related to the severity of depression (Hasher et al., 1985). These researchers maintained that depression should most severely constrain performance when the task is difficult and requires

effort. Easy tasks should not be affected because they require little cognitive capacity. In terms of a causal mechanism for this hypothesis, dopaminergic dysfunction may interfere with effortful cognitive processes (those requiring greater cognitive capacity) but leave automatic processes relatively intact (Roy-Byrne et al., 1986). However, in a series of three experiments with college undergraduates, researchers were unable to find any significant differences between depressed and nondepressed participants in their ability to recall information presented (Hasher et al., 1985).

One reason for this may have been the use in this experiment of an undergraduate population with a rather low criterion level for depression (a score above 7, with a mean of 12 on the Beck Depression Inventory, or BDI) which would generally indicate the absence rather than presence of depressive symptomatology. In this type of population, for whom recalling information is a central part of routine daily activity, it may be necessary to have more severe levels of depression to find evidence of interference with this type of task.

A second problem may be that high or low levels of arousal may cause reduced cognitive capacity and consequent impairment of performance on tasks needing effortful processing. The basis for this suggestion is the Yerkes–Dodson law (1908), which construes performance as an inverted U-shaped function of arousal. Kahneman (1973) also supports the belief that performance varies as a function of arousal. He maintains, however, that the effects of high and low arousal are caused by different mechanisms. Low arousal results in a lack of motivation while high arousal causes a narrowing of attentional focus, thereby restricting the range of cues to which an individual is capable of attending.

NARROWING OF ATTENTIONAL FOCUS

An alternative hypothesis to explain the negative effect of depression on decision making argues that total cognitive capacity is not

reduced but that depressed people focus on task-irrelevant thoughts. This results in impaired performance on effortful tasks (Hartlage et al., 1993). Several studies have illustrated that emotional states produce a narrowing of attentional focus (Conway & Giannopoulos, 1993; Mano, 1992; Wright & Bower, 1992). Ingram (1984a; 1984b; 1990) suggested that available cognitive capacity is occupied with depression-related or self-related information. Subjects who had an induced negative mood and who were presented with unfavorable self-related feedback recalled more of that feedback than subjects who had a positive mood induced in them. It seems that people with negative moods give more weight to, or focus more attention on, negative material than do those who have a positive outlook.

Mano (1992) conducted a study to assess the effects of displeasure on judgments, evaluations, and gambles made during a naturally occurring distressing situation. He found that subjects under distress adopted simpler decision rules and expressed more polarized judgments. He also found that distressed subjects were more likely to take a risk than controls (they were willing to pay more for the same lottery).

Applying these study findings to the naturally occurring situation, we find that it seems reasonable to suppose that depressed people will focus on self-related or depression-related cues and will, therefore, show deficits in cognitive processes that require cognitive effort. Such deficits may be compounded when several emotional disorders are combined, such as depression, conduct disorder, and substance abuse. If an individual is not capable of engaging in deep or effortful processing of all the information relevant to his or her particular problem, it is likely that the decision made will show evidence of impulsivity. That is to say, simpler decision rules will be used, fewer cues will be attended to, and more polarized or extreme judgments will be made (Mano, 1992).

Dysphoric subjects also made less use of relevant information in an evaluative task than nondysphoric subjects did, even though the task was highly structured (Conway & Giannopoulos, 1993). From the research gathered to date, it would seem that this mode of decision making is characteristic of both suicidal and risk-taking adolescents.

Problem-Solving and Decision-Making Deficits in Risk-Taking

Adolescents do not appear to believe that they are invulnerable or indestructible. They are as capable as their adult counterparts of assessing the risks and consequences of a variety of risk behaviors commonly associated with adolescence. They were also found to be very similar to adults in their ability to judge the probability of adverse outcomes occurring for themselves and others (Beyth-Marom et al., 1993; Quadrel et al., 1993). These studies suggest that when adolescents choose to engage in risk behaviors they are as aware of the possible consequences as adults are. However, we are still left with the question as to why some adolescents continue to choose to engage in serious risk behaviors.

NARROWING OF ATTENTIONAL FOCUS

One possibility is that the individual who chooses to engage in risk behaviors is like an individual engaged in problem solving while in a state of depression or stress. There may be a narrowing of his or her attentional focus caused by the anticipation of the activity. This may lead to a situation in which simpler decision making strategies are used and attention is paid to fewer cues. A study by Benthin, Slovic, and Severson (1993) found evidence to support the hypothesis that

perception and assessment of risk differs depending on whether the subject engages in the activity he or she is assessing or not. Adolescents who had engaged in the behaviors they were assessing for risk, when compared with adolescents who had not engaged in the activities, reported a greater confidence in their knowledge of the risks involved (this knowledge may or may not have been accurate). They also reported less fear of the risks, greater benefits than risks associated with the activity, less seriousness of effects, greater peer pressure to engage in the activity, more personal control over the risks, less ability to avoid engaging in the activity, and a higher perceived participation rate by peers. This finding could support the suggestion that when an individual is actually involved in making a decision to engage in a risk activity, the level of arousal is such that he or she is using simpler decision rules and attending to fewer cues (Mano, 1992).

REGRET THEORY

A theoretical basis for minimizing loss in decision making may be found in the literature dealing with decision making under uncertainty. Regret theory (Bell, 1983, 1985) suggests that risk preference and decisions involving risk can be understood in terms of a person's desire to avoid the unpleasant psychological consequences of making a wrong choice (Larrick, 1993). In contrast to subjective expected utility (SEU) theory, regret theory suggests that individuals do not simply combine probabilities and outcomes to reach an overall value for a decision (SEU). Instead, they compare the outcome of an action with the outcomes that might have occurred if they had made different decisions. They then choose the action that minimizes regret. For example, the odds of winning the Lotto are extremely remote, but an individual would experience intense regret if he or she failed to play on an occasion when he or she would have won. Therefore, many individuals participate to minimize regret.

It would seem possible to apply this formulation to the types of decisions made by adolescents who engage in risk-taking behavior. Beyth-Marom et al. (1993) point to the fact that it is important when one is assessing adolescent attitude toward risk to assess the consequences for them of *not* engaging in risk behavior. An assessment of the costs and benefits of the perceived consequences of both engaging in and not engaging in a risk behavior could serve to illustrate the decision processes involved in taking risks that to many may appear to be inordinate and unnecessary. Regret theory would suggest that adolescents know the risks involved in their behaviors but are willing to take them because they wish to avoid the feeling of regret produced by not taking, and successfully negotiating, a risk.

JUDGMENT AND CONFIDENCE

Bell (1983, 1985) also suggests that a willingness to take risks is associated with a higher level of self-esteem and confidence. This may, in fact, be the case with risk-taking adolescents. However, a contrary explanation is that their self-esteem is tied to their willingness to engage in risk-taking behavior or to be part of a risk-taking peer group. If this is the case, then the decision to engage in the behavior may indicate a lack of self-esteem and a low level of decision making. Quadrel et al. (1993) found, in a test of general knowledge about the consequences of risk behavior, that a group of high-risk adolescents (delinquents) were much more confident of the accuracy of their knowledge, when they were in fact wrong, than either low-risk adolescents or adults.

Beyth-Marom et al. (1993) conducted a study to examine whether risk takers see different consequences for risk behaviors when they are compared with adolescents who engage in few risk behaviors. The results showed very similar responses for the two groups. However, one noticeable difference was that the risk takers produced fewer consequences for the risk behaviors. The authors concluded that these

adolescents do not work as hard or as effectively at generating possible consequences as the nonrisk group. Certainly it is necessary to assess whether these high-risk adolescents view their own risk-taking behavior in the same light as they view hypothetical situations.

It may be the case that in situations in which the adolescents have had actual experience (where presumably nothing bad has occurred), they are overconfident in their knowledge and, by inference, their ability to cope. This would then fit with Bell's theory that a willingness to take risks is associated with a higher self-esteem. Things go wrong for these adolescents when their judgment is poor and they end up in trouble or, worse still, in jail or a detention center. They have obviously made a wrong decision, self-esteem decreases, problem-solving deficits come into play, and they may suffer depression; at this point they are at risk of suicidal behavior. If one were to interview adolescents who have engaged in risk behaviors and to ask them to describe the costs and benefits of engaging in or not engaging in the behavior at the time the decision was made, then we may be closer to comprehending the assessment of such risks.

Conclusions

The studies undertaken by Borst and Noam (1993), Dodge (1993), and Rotheram-Borus and Trautman (1988) all indicate that there are at least two quite distinct groups of adolescents at risk for suicidal behavior. One group exhibits depressive symptomatology and the other group presents with conduct disorder and aggression. Both groups show deficits in problem solving and decision making. However, these deficits are different for each group, as are the types of behaviors they engage in and the symptomatology they display. It should also be the case that embedded in the problem-solving and decision-making deficits are differing attitudes toward, and perceptions of,

risk and risk-taking behavior. Following from this, it is also likely that decision-making processes may be different. For example, there may be different reasons for making particular decisions, the costs and benefits may be perceived differently, or the costs of not engaging in behavior may be significant. It is important to clarify the distinctions between these groups, both for purposes of recognition or diagnosis and because intervention programs would have different points of emphasis.

Our task from here is twofold. First, we need to establish whether our formulation of the interrelationships between variables presented is valid – whether, in fact, the variables that we suggest (problem solving, hopelessness, protective factors, and decision making) demonstrate significant mediation between psychopathology such as depression, symptoms such as conduct problems and substance problems, and later outcome behaviors such as suicide attempts and serious risk-taking. Second, we need to establish whether our formulation is clinically useful. That is, are these identified variables actual deficits in identifiable at risk populations, and can we use them in a clinically useful manner so that, by correcting them, we create a means to intervene before suicide is attempted?

AN EVALUATION OF THE S/RT MODEL

9 Depressed and Problem Behavior Adolescents

So far, the literature reviewed suggests that depressed adolescents and risk-taking adolescents differ from normal adolescents in their problem-solving, risk-assessment, and decision-making capacity. The S/RT model described in Figure 8.2 suggests that early risk factors are precursors to the development of psychopathology such as depression and problem behaviors (conduct disorder and substance abuse problems). Alcohol, stress, and peer pressure may exacerbate these deficits, while protective factors may offer stability to young people in this situation.

This chapter and the next two describe research that shows empirical support for the S/RT model in three distinct ways. This chapter checks that depressive symptomatology and problem behaviors relate to the mediating constructs: problem solving, hopelessness, protective factors, and decision making. Chapter 10 checks that these mediating constructs relate to suicidal behavior and risk-taking behavior. Chapter 11 tests whether these constructs do mediate between depression and problem behaviors on one side and suicidal behavior and risk-taking behavior on the other.

The S/RT model aims to demonstrate links between cognitive constructs and behavioral outcomes. In previous research and in the literature, adolescents are often grouped by terms such as "depressed," "problem behaviour," "risk takers," and "suicidal." The design used to test the links in the S/RT model uses these groups. Adolescents can also be measured according to their depressive symptoms, problem behaviors, risk-taking behaviors, and suicidal behaviors. Broadly speaking, we note that depressive symptomatology and problem behaviors are like independent variables; suicidal and risk-taking behaviors are like dependent variables. The mediating constructs of the S/RT model operate between the independent and dependent variables. Thus, our research used both between-group comparisons and multiple regression (using variables to predict outcomes) to test the links in the S/RT model. To do this we used some measures of the constructs from the literature, and we developed some of our own.

The independent variables in the model are depression and problem behaviors, and the questionnaires measuring these constructs were used to form groups for this study. Depressive symptomatology is measured by the BDI (Beck, 1978). Scores on the BDI range from 0 to 63. Although these scores do not allow a diagnosis of depression, they do indicate the level of depressive symptomatology.

The measures used to assign participants to the problem behavior group included the Substance Use Scale, which asked individuals to indicate any substances they used, how frequently they used them, the quantities used, and whether they considered that they abused either alcohol or drugs. The scale was developed for use in this research. Other indicators of problem behaviors included self-report or teacher–parent report of behaviors such as being truant, staying out late, having arguments at home, or experiencing problems at school. It was also possible to identify potential participants for this

group from responses to the Perception of Risk Scale (Benthin et al., 1993), which asked participants to indicate the activities they had participated in within the past 6 months and how frequently.

The dependent variables for the model encompass constructs of suicidal behavior, risk-taking behavior, and suicidal and risk-taking behavior combined. They are used to define group membership in the study reported in Chapter 11.

Participants were assigned to the suicide group if they had made one or more suicide attempts that had resulted in hospitalization. The measure of suicidal behavior was the Suicide Behavior Scale (SBS) developed for use in these studies. Participants were assigned to the risk-taking group if they had engaged in risk-taking behavior such that they had served time in a detention center or performed community service. They must never have made a suicide attempt of any kind and risk-taking was measured by the Risk-Taking Behavior Scale (RTBS) developed for use in these studies. The suicide and risk-taking combined group was made up of participants who fulfilled criteria for both suicide and risk-taking; that is, they had made a suicide attempt resulting in hospitalization and had engaged in behavior that had resulted in legal consequences and the combined behavior was measured by the SBS and the RTBS combined.

Each of the proposed mediating variables is a cognitive construct and is discussed in Chapters 5 and 8. These are problem solving, hopelessness, protective factors, and decision making. Problem solving was measured with a range of variables. The first measure of problem-solving appraisal was the Problem Orientation Scale (POS) from the Social Problem-Solving Inventory (SPSI; D'Zurilla & Nezu, 1990) and a measure of appraisal of solutions generated from the Social Situations Analysis Test (Connolly, 1988). The next measures of problem solving involved the ability to generate relevant solutions to social or interpersonal problems. The two measures used were the

Means–Ends Problem-Solving Test (Platt & Spivack, 1975) and the Social Situations Analysis Test (Connolly, 1988). Two scores were taken from these tests – the number of relevant solutions generated and the number of irrelevant or aggressive solutions generated. The final measure of problem solving was the use of identifiable problem-solving strategies, and this was measured by the Problem-Solving Scale (PS) from the SPSI (D'Zurilla & Nezu, 1990). Taken together, four variables were obtained to evaluate the problem-solving skills and deficits of the different groups of adolescents. This allowed for a more detailed assessment of both similarities and differences than those undertaken in earlier studies.

Hopelessness was measured with the Beck Hopelessness Scale (Beck et al., 1974). This is a single scale with multiple items. It was expected that hopelessness would only be pertinent in the second study in which the suicidal adolescents took part, but it was used as a measure in both studies. The construct of protective factors was measured by the College Reasons for Living Scale (College RFL; Linehan et al., 1983; Westefeld et al., 1992). This measure was included because it gives an indication of some of the adaptive beliefs and expectations that protect against suicidal and risk behaviors (Linehan et al., 1983). It has also been found (Strosahl et al., 1992) that the Survival and Coping Beliefs subscale of the RFL is more effective in discriminating suicide attempters from nonsuicidal psychiatric patients and suicide ideators than hopelessness. It was also expected that this construct would only be relevant in the study that accessed adolescents who had attempted suicide (reported in Chapter 10), but it was used as a measure in this study for comparison purposes.

The final construct, decision making, was measured within the framework of risk assessment. This was done because the types of decisions of interest in this book are decisions made in and about risk situations. In a task based on the work of Beyth-Marom et al. (1993)

and Quadrel et al. (1993), participants were given three hypothetical situations (riding with a drunk driver, taking an unknown drug at a party, and being truant from school). They were then asked whether they would actually take part in the activity and to state the reasons for their decisions. For each situation they were given different outcomes. One such outcome was called the False Alarm situation, a no-harm outcome for an activity from which the participant abstained. Participants were then asked to write down the costs and benefits under these circumstances.

Prior use of this task by Sofronoff (1999) showed, by means of a content analysis, that the costs for the False Alarm scenario fell into two categories: the negative reactions of peers and the regret of missing the fun of the activity. Their responses were scored by use of the importance score (0–4) with which the adolescent had rated them. The total of the importance score for the two categories was termed the response to the False Alarm situation.

Data Collected

We obtained data on three groups of adolescents, namely a depressed group, a problem behavior group, and a comparison group. The study compares adolescents who show current symptoms of depression or problem behaviors with nondepressed adolescents with no problem behaviors to see if they vary on measures of the cognitive variables – problem solving, hopelessness, protective factors, and decision making. The variables used are presented in Table 2. The risk factors that predispose young people toward both depression and problem behaviors have already occurred in the lives of these adolescents, and the study does not attempt to look for evidence of these predisposing factors. We accept that they have had their effect.

Table 2 Measures taken and details of group allocation

Measures of constructs (Independent and dependent)	**Source**
Beck Depression Inventory	Beck (1978)
Substance Use Questionnaire	Constructed for this research
Perception of Risk Scale	Benthin et al. (1993)
Suicide Behavior Scale	Constructed for this research
Risk-Taking Behavior Scale	Constructed for this research
Measures of mediating constructs	
Beck Hopelessness Scale	Beck et al. (1974)
Reasons for Living Scale	Westefeld et al. (1992)
Means–Ends Problem-Solving Test	Platt & Spivack (1975)
No. of relevant solutions	
No. of irrelevant or aggressive solutions	
Social Situations Analysis Test	Connolly (1988)
No. of relevant solutions	
No. of irrelevant or aggressive solutions	
Appraisal of solutions	
Social Problem-Solving Inventory	D'Zurilla and Nezu (1990)
Problem Orientation Scale	
Problem-Solving Scale	
Risky decision making	Constructed for this research
No. of risky decisions	
False Alarm response	Constructed for this research
Regret	
Peer influence	
Groups	**Criteria**
Depressed adolescents: $n = 21$ (17 females, 4 males)	BDI score > 16; no suicide attempt or ideation; no antidepressant medication. Mean BDI $= 21$, $SD = 5.0$. Mean no. of risky activities $= 4.7$, $SD = 2.1$. Mean substance abuse $= 0$, $SD = 0$ (0,1).

Groups	Criteria
Problem behavior adolescents: $n = 19$ (6 females, 13 males)	Self-reported participation in aggressive and risky behaviors as included on Perception of Risk Scale (Benthin et al., 1993). Reports by others (psychologist or parent) of problem behaviors, or self-report or other report of substance abuse. Mean BDI = 8, $SD = 5.7$. Mean no. of risky activities = 6.7, $SD = 2.5$. Mean substance abuse = .42, $SD = 0.51$ (0,1).
Comparison adolescents: $n = 18$ (9 females, 9 males)	Selected to be comparable in age, gender, and educational level with other groups. Mean BDI = 4.0, $SD = 3.54$ Mean no. of risky activities = 2.66, $SD = 2.11$. Mean substance abuse = 0, $SD = 0$ (0,1).

Method

PARTICIPANTS

The participants in the depressed group ($n = 21$) and in the problem behavior group ($n = 19$) were recruited from an undergraduate population at a university and from psychologists and psychiatrists in private practice. Adolescents in the comparison group ($n = 18$) were recruited from the same undergraduate population and from the community. They were comparable in age, gender, and educational level with the young people in the other two groups. The participants were between 16 and 21 years of age.

MATERIALS AND PROCEDURE

Table 2 provides a list of measures collected from the participants along with the criteria used for group assignment. All participants completed the BDI (Beck, 1978) and a questionnaire pertaining to substance use (including alcohol use) that was developed specifically for these studies. Participants completed some of the measures as a means of ensuring correct group allocation. The participants were administered the battery of questionnaires individually, and this took between $1\frac{1}{4}$ and $1\frac{1}{2}$ hours.

Results

The main question was whether there would be a relationship between the independent constructs and the mediating constructs as depicted in the S/RT model. Since we "measured" the independent constructs by allocating participants into groups, that is, depressed, problem behavior, and comparison, an analysis testing for differences among the three groups on the measured mediating variables will address the research questions. There are nine mediating variables and we expect correlations between them. To take into account these correlations, we performed a discriminant analysis not only to test for the differences between the means of the groups on each mediating variable but also to show the pattern of group differences with the mediating variables as a set. We performed all analyses by using SPSS (Statistical Package for the Social Sciences, Version 10). The results of these analyses appear in Table 3.

An advantage of discriminant analysis is that it provides a way to represent the multivariate differences among the groups. There were two significant functions. The first function ($\chi^2 = 110.06$, $df = 18$, $p < .0001$) separated the depressed group from the other two groups, with the depressed group endorsing significantly lower scores

Table 3 Means, standard deviations, Univariate *F* ratios, *F*-to-remove statistics, and structure coefficients

	Group			Univariate *F* ratio *df* = (2, 55)	*F*-to-remove *df* = (2, 46)	Structure coefficients	
	Depressed	Problem behavior	Comparison			F_1	F_2
Hopelessness	7.48 (4.9)	3.00 (2.4)	2.17 (3.1)	12.04***	0.31	−.40	−.03
Reasons for living	42.14 (7.3)	48.74 (5.4)	46.00 (9.1)	4.06**	1.51	.19	.19
Relevant solutions	11.29 (2.8)	10.95 (2.5)	14.50 (4.2)	6.85***	0.63	.18	−.35
Irrelevant solutions	1.48_a (1.8)	3.95_b (1.9)	1.44_a (1.3)	8.09***	1.59*	−.12	.44
POS	43.0_a (20.2)	85.4_b (18.3)	93.6_b (11.9)	48.66***	17.39***	.79	.06
PS	80.62 (22.0)	94.05 (17.2)	105.88 (16.5)	8.71***	0.81	.32	−.14
Positive resp. to solutions	2.66_a (1.3)	3.57_b (1.2)	4.50_b (.7)	13.63***	2.98**	.40	−.19
No. of risky decisions	0.43 (.7)	1.42 (.7)	0.11 (.3)	20.49***	0.99	.06	.76
Resp. to False Alarm situation	3.76_a (3.7)	8.26_b (4.3)	0.56_c (.8)	25.01***	5.13***	−.05	.84

Notes: Standard deviations are given in parentheses.
a,b,c Subscripts are used to indicate results of a Tukey honestly significant difference comparison.
Means in the same row that do not share subscripts differ at $p < .05$

* With transformed data, $F(2, 46) = 3.44$, $p < .05$; ** $p < .05$; *** $p < .001$.

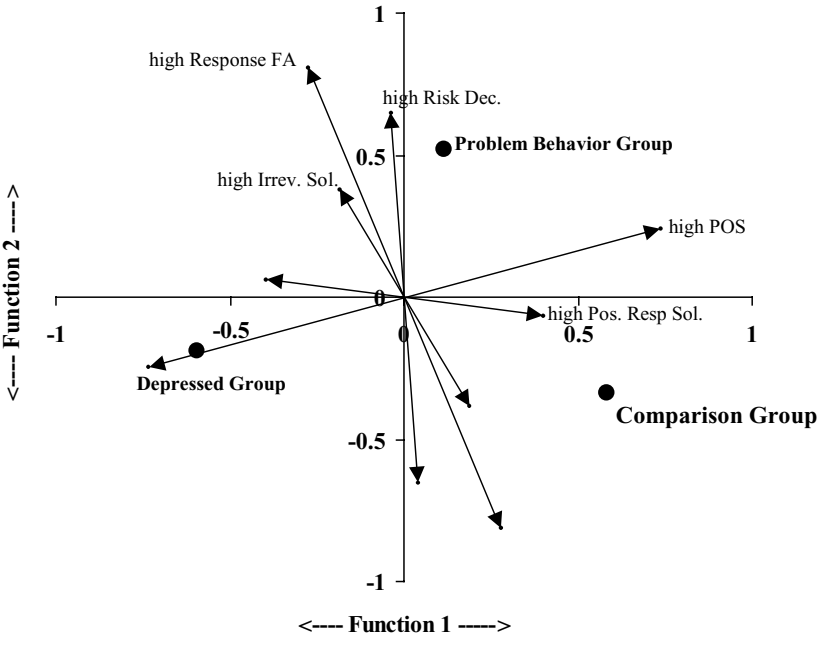


Figure 9.1. A plot of the group centroids for the three groups, showing the separation of the groups by the mediating variables on the discriminant functions (FA = false alarm). POS. = Problem Orientation Scale; Pos. Resp. Sol. = Positive Response to Solutions; Risk Dec. = Decisions taken to engage in hypothetical risk activities; Irrev. Sol. = Number of irrelevant or aggressive solutions to problems.

on two measures of problem-solving appraisal, that is, the POS and the number of positive responses to solutions generated. The squared canonical correlation for this function of 54% indicates a very strong effect.

The second function ($\chi^2 = 42.08$, $df = 8$, $p < .0001$) separated the problem behavior group from the other two groups, with the problem behavior group having a high value placed on regret and negative reactions of peers in response to the False Alarm situation, a high number of decisions taken to engage in hypothetical risk activities, and a high number of irrelevant or aggressive solutions to

problems (Means–Ends Problem-Solving Test and Social Situations Analysis Test). The squared canonical correlation for this function was 32% and shows a strong effect.

Figure 9.1 shows the plot of the three group centroids on the two discriminant functions. To graphically show the role the variables play in separating the groups, we plot the variables by using coordinates given by the structure coefficients. The depressed group is clearly at the low end of the POS variable and positive response to solutions. The problem behavior group is clearly high on their response to False Alarm situations, the number of risk decisions endorsed, and the number of irrelevant solutions they generated.

Discussion

This chapter set out to test the relationship between the mediating constructs of problem solving, hopelessness, protective factors, and decision making and the dependent constructs of depression and problem behavior in the S/RT model. It was necessary to operationalize and measure these constructs. Three groups were selected for the study, encompassing depressed, problem behavior, and comparison individuals. Each group was measured on a range of variables reflecting the mediating constructs. The discussion first focuses on the differences between the groups for each of the mediating constructs in turn.

PROBLEM SOLVING

Problem solving was operationalized as both appraisal of problem-solving skills and actual problem-solving skills. The appraisal of problem solving was measured by the POS from the SPSI (D'Zurilla & Nezu, 1990) and the number of positive responses to solutions generated on the Social Situations Analysis Test (Connolly, 1988).

Actual problem-solving skills were measured by the PS from the SPSI (D'Zurilla & Nezu, 1990), the number of relevant solutions generated on the Means–Ends Problem-Solving Test and the Social Situations Analysis Test, and the number of irrelevant or aggressive solutions generated on the Means–Ends Problem-Solving Test and the Social Situations Analysis Test.

These measures were each successful, from the univariate *F* ratios, in differentiating between groups, which lends support to the suggestion that problem solving may be an important mediating construct as proposed by the S/RT model shown in Figure 8.2. However, when the correlations among the variables are taken into account, a simpler picture emerges. From the discriminant analysis, the measures of problem-solving appraisal uniquely differentiated the depressed group from the problem behavior group and the comparison group, while the number of irrelevant or aggressive solutions generated uniquely separated the problem behavior group from the other two groups.

The analyses also found, as expected, that the problem behavior group produced more irrelevant or aggressive solutions to problems (actual problem-solving skills). From an anecdotal point of view, the researcher (Kate Sofronoff) observed these adolescents during the process of gathering the data. It became apparent to her that they tended to write down the first responses that came into their heads. This was often either an aggressive or an irrelevant response. Then they reflected on these answers and came up with more acceptable responses. It may be that in a real situation, when under stress, or under the influence of drugs, alcohol, or peers, these adolescents would not take the extra time to reflect and come to a more acceptable conclusion. They may simply act on their initial thoughts. In other instances, the researcher noted that some adolescents were able to generate only one or two solutions to problems and after this they tended to offer irrelevant and aggressive suggestions.

Beyth-Marom et al. (1993) also found that in a delinquent population only a few solutions were generated. This finding was important because it underlined the value of actually examining the quality of the solutions offered. If only the number of solutions had been used as in the study by Pont (1995), reviewed in Chapter 8, then no significant differences would have been found between groups. On the PS, a measure of the adolescent's knowledge of actual problem-solving skills, the mean for the depressed group was lower than that for the other two groups. This was not expected since the literature suggests that depressed adolescents are capable of finding solutions to problems. The effect is not strong enough to suggest meaningful conclusions, and it was no longer significant when correlation with other variables was taken into account (*F*-to-remove statistic). However, it will be interesting to see if this finding is replicated with the adolescents who have attempted suicide, as reported in the following chapter.

The results of analyses also demonstrated, as expected, that the depressed group would score significantly lower on the POS from the SPSI; that is, they demonstrate negative and avoidant responses when asked about dealing with problem situations. They also endorse fewer positive responses to their own solutions to problems (appraisal of problem-solving skills); this is demonstrated by an ability to generate a solution to a problem but then a statement to the effect that this solution would not work for them. It is important to note that this result was very strong despite the fact that these adolescents had not received a diagnosis of clinical depression, had not been prescribed antidepressant medication, and at the time of their participation were functioning apparently normally. This finding lends support to the suggestion in the literature (e.g., Rudd et al., 1994) that, when depressed, adolescents doubt their ability to solve problems even when they are actually doing so. They believe that the solutions they generate are unlikely to produce a good outcome, and

they say that even though these solutions may work for others they would not work for them (Schotte & Clum, 1987). This finding lends further support to the suggestion (Rudd et al., 1994) that problem-solving appraisal is more important than actual problem solving as a predictor of future pathology.

DECISION MAKING

Decision making was operationalized in the context of risk assessment and was measured by the number of hypothetical risk decisions the adolescents said they would make. These decisions were then further studied when adolescents were asked about the costs of a decision *not* to engage in a risk activity when there are no negative consequences, a False Alarm situation. These costs concerned either negative reactions from peers or regret at missing out on the fun. The data analysis, including both regret and negative reactions of peers, found similar differences between the groups for both measures. For this reason the two costs of a False Alarm situation were pooled to get the total response of the adolescent to the False Alarm situation. There is a very high correlation, .74, between the response to the False Alarm situation and the number of high-risk decisions endorsed. This explains why only the response to the False Alarm situation was significant on the *F*-to-remove statistic and the number of risk decisions was not significant.

Figure 9.1 shows these two variables clearly distinguishing the problem behavior group from the other two groups. What this means is that the problem behavior group decides to engage in more risk activities and also associates more costs with the False Alarm situations (not engaging in a risk activity when the outcome is neutral). It is also very interesting that the problem behavior group differed so strongly on regret and perceived negative reactions of peers. This shows a mechanism by which peer influence affects risk-taking

behavior and suggests that it may be a mediating variable. We return to this point and its implication for therapy in later chapters.

This study also demonstrated that the adolescent participants, regardless of whether they engaged in the risk activity or not, were able to outline the consequences of engaging in a risk activity. This supports earlier findings (Beyth-Marom et al., 1993; Quadrel et al., 1993) that adolescents are aware of the consequences associated with risk activities and do not believe themselves to be invulnerable. What we are moving toward in this study is a clearer understanding of the seemingly paradoxical finding that, although these adolescents are aware of the consequences of their decisions to engage in risk behaviors, they nonetheless continue to decide to do so.

The result of this analysis leads to the suggestion that, in a risk situation where an adolescent does not know the outcome, as in any real-life risk situation, those who are prone to take risks are strongly influenced by a combination of peer influence or a need to be with peers and a strong feeling that they will regret missing the fun if they do not engage in the activity. It would seem that this combination of factors outweighs any fear of consequences, which is the deterrent endorsed by adolescents unwilling to engage in risk activities.

HOPELESSNESS

The Beck Hopelessness Scale measured the mediating construct of hopelessness. Univariately, the depressed group had the highest hopelessness mean score. However, these differences were not significant when the correlations among the variables were taken into account. This is not to say, however, that it will not prove to be a useful mediating variable in the next study when the data from suicidal adolescents are analyzed. The construct of protective factors was also measured by a single instrument, the College RFL (Westefeld et al., 1992). Univariately, the depressed group had lower reasons for living scores than the problem behavior group. Again, these differences

were not significant when the correlations among the variables were taken into account. It was not expected that these variables would differentiate between nonsuicidal groups.

In summary, the results show that adolescents with depressive symptomatology, a correlate of suicide, can be discriminated from other adolescents on measures of problem-solving appraisal. They describe a negative orientation to the task of problem solving, and, when they do generate solutions to problem situations, they rate these solutions as unlikely to be effective.

Adolescents with conduct and substance abuse problems (problem behaviors) can be discriminated from other adolescents by their tendency to generate more aggressive and irrelevant solutions to problems, by their willingness to accept risk by deciding to engage in risk behavior, and by their unwillingness to experience regret at missing out and negative reactions from their peers.

10 Suicide Attempters and Risk Takers

In this chapter we turn our focus to the outcome behaviors – suicidal behaviors and serious risk-taking. This research tests whether these behaviors are related to the mediating constructs in our S/RT model (Figure 8.2). One of our aims was to find whether the cognitive mediating constructs might be useful as potential indicators of a trajectory toward suicidal behavior. If we can identify common deficits in the cognition of suicidal young people, it may be possible to target preventative programs more effectively in order to remediate these deficits. The same reasoning applies to serious risk-taking behaviors. The strategy is to compare suicidal and risk-taking adolescents with each other and with a comparison group of adolescents who do not show these behaviors.

Method

PARTICIPANTS AND GROUP ALLOCATION

All participation was voluntary and all participants received 20 dollars for their time. There were no indigenous Australians in these

groups. Participants in the groups were recruited from a variety of sources: through consultant referral from a hospital; through referral from social workers in Juvenile Justice; through referral from psychologists and psychiatrists in private practice; and from a shelter for homeless youth.

Adolescents were interviewed individually, and they generally completed the questionnaires in a session of $1\frac{1}{2}$ hours. In the course of data collection, it became apparent that several of the adolescents were unable to read and write and could not understand the questions even when they were read to them. These adolescents were paid for their time but data from them were not included in the analyses. There were six participants who were excluded on this basis.

SUICIDE ATTEMPTER GROUP

These participants were selected on the basis of the individual having made a suicide attempt serious enough to have warranted treatment from a doctor or nurse. Adolescents were excluded from this group if they had also been in trouble with the police and as a result spent time in a detention center or received a Community Service Order. There were 15 young people, 4 males and 11 females, in this group aged from 15 to 21 years (mean age 17.7 years). Table 5 (shown in the Results section) reports the means for this group on the SBS, where 0 = have never contemplated nor attempted suicide and 10 = have made more than two severe suicide attempts. Participants were also asked this question: "Would you ever consider suicide to be a realistic solution to your problems?" Table 4 also reports the proportion who responded "yes" to this question as well as the means for the RTBS, Substance Use Questionnaire, and the BDI. These variables were used as screening variables for checking the allocation to groups.

Table 4 Means, standard deviations, and *F* ratios for screening measures

	Group				
	Suicide attempters	Suicide attempters + risk takers	Risk takers	Comparison	*F*(3, 61)
SBS	6.47_a	7.40_a	0.61_b	0.59_b	65.3**
	(2.53)	(2.75)	(0.50)	(0.51)	
Suicide as option (yes or no)	0.40_a	0.73_b	0.28_{ab}	0	3.93[1]
	(0.51)	(0.46)	(0.46)	(0)	
RTBS	2.07_b	8.27_a	7.94_a	3.47_b	32.55**
	(2.34)	(2.15)	(2.13)	(2.15)	
Risky activities	5.53	10.13	6.72	2.76	17.04**
	(2.90)	(3.50)	(3.12)	(2.17)	
Substance Use Questionnaire	0.07_a	0.67_b	$0.44_{a,b}$	0	7.15[2]
	(0.26)	(0.49)	(0.51)	(0)	
BDI	21.47_{ab}	28.73_b	16.83_a	4.53_c	12.74**
	(11.40)	(14.30)	(13.40)	(3.84)	

Notes: Standard deviations are given in parentheses. Means in the same row that do not share subscripts differ at $p < .05$ in Tukey's honestly significant difference comparison.

[1] Comparison group is not included in analysis of variance; $F(2, 45) = 3.93$, $p = .027$.
[2] Comparison group is not included in analysis of variance; $F(2, 45) = 7.15$, $p = .002$.
** $p < .001$.

SERIOUS RISK-TAKER GROUP

These participants were selected on the basis of the individual having exhibited behavior that had resulted in their breaking the law in a way sufficient to cause them to be before a court and to be detained in a detention center or to have been sentenced to time spent in community service. There were 18 young people, 15 males and 3 females, in this group aged from 15 to 20 years (mean age 17.3 years). Table 4 reports the means for the screening variables.

SUICIDE ATTEMPTERS AND RISK TAKERS COMBINED GROUP

Participants in this group were selected on the basis of a suicide attempt for which they had received hospital attention as well as behavior serious enough to result in time spent in a detention center or in community service. There were 15 young people, 9 males and 6 females, in this group aged from 14 to 21 years (mean age 17.13 years). Table 4 reports the means for the screening variables for this group.

COMPARISON GROUP

The comparison group was recruited so as to be comparable in age and educational level with the other groups. These individuals ranged in age from 16 to 20 years (mean age 18.35 years), and there were 18 participants – 9 males and 9 females. Half of these participants were recruited from a shelter for homeless youth and the rest were either high school students or university undergraduates. Table 4 reports the means of the screening variables for this group.

MATERIALS AND PROCEDURES

The materials used were identical to those in the first study. Table 2 (Chapter 9) shows the variables measured. The measures were administered to each participant individually in order to maximize full completion and to ensure that participants took a break if they appeared tired or bored.

Results

The main question was whether there would be a relationship between the mediating constructs and the independent constructs as depicted in the S/RT model. Consistent with the data analytic approach taken in Chapter 10, a discriminant analysis was used to

test for differences between the four groups of adolescents on the nine correlated mediating variables. We performed all analyses by using SPSS (Version 10).

Table 5 reports the means and standard deviations for each mediating variable for each group together with the *F*-to-remove statistic and the structure coefficients. The univariate *F* ratio for each mediating variable was significant at $p < .001$ (not shown in Table 5). As explained in Chapter 9, it is the *F*-to-remove statistic that indicates the unique contribution of a variable to the separation between the groups after all the other variables have been taken into account.

Using this statistic, we see that there are significant differences between the groups on the RFL; the number of relevant solutions generated; the positive response to solutions; and the number of risk decisions endorsed. The use of identifiable problem-solving strategies, measured by the PS of the SPSI, was significant at $p = .07$. Given that the variable's structure coefficient was relatively high on the second discriminant function, 0.63, it was decided to include this variable in the interpretation of the second discriminant function. While problem orientation (problem-solving appraisal) also has a high structure coefficient on the second function, it was not included in the interpretation because it has a small *F*-to-remove statistic.

While the comparison between the means for each variable is useful and interesting, it does not show the pattern of differences across variables. The discriminant analysis yielded three significant discriminant functions. As a way to enhance interpretation by showing what variables most clearly separate the groups, an orthogonal varimax rotation was done (Tabachnick & Fidell, 2001).

The first discriminant function, $\chi^2(27) = 117.0$, $p < .0001$, separated the comparison group from the other three groups and the depressed group from the other two groups, with the comparison group endorsing significantly higher scores on a measure of actual problem-solving skills, the number of relevant solutions, a measure

Table 5 Means, standard deviations, *F*-to-remove statistics, and structure coefficients

	Group					Rotated structure coefficients		
	Suicide attempters	Suicide + risk takers	Risk takers	Comparison	*F*-to-remove $df = (2, 46)$	F_1	F_2	F_3
Hopelessness	6.80	10.87	7.22	2.24	1.08	−0.11	−0.26	0.46
	(5.19)	(5.66)	(4.82)	(2.91)				
Reasons for living	28.53_a	27.40_a	44.39_b	53.00_b	4.27**	0.03	0.84	0.02
	(14.41)	(12.74)	(12.01)	(5.65)				
Relevant solutions	9.40_a	7.73_a	6.39_a	15.06_b	4.79**	0.66	−0.04	−0.26
	(3.87)	(4.06)	(2.99)	(3.90)				
Irrelevant solutions	4.00	4.40	4.83	2.00	1.17	−0.32	0.00	0.09
	(2.62)	(3.04)	(2.66)	(1.66)				
POS	49.73	41.47	65.00	91.00	0.91	0.17	0.61	−0.16
	(25.75)	(21.08)	(24.03)	(12.15)				
PS	71.47_a	62.73_{ab}	90.06_{bc}	106.12_c	2.52	0.02	0.63	−0.17
	(23.24)	(21.93)	(23.18)	(17.24)				
Positive resp. to solutions	2.00_a	2.20_a	1.89_a	4.65_b	3.18*	0.62	0.18	0.10
	(1.41)	(1.37)	(1.81)	(0.61)				
No. of risky decisions	$0.53_{a,b}$	1.53_c	$1.11_{b,c}$	0.12_a	3.66**	−0.16	−0.03	0.74
	(0.92)	(0.83)	(0.83)	(0.33)				
Resp. to False Alarm situation	2.33	3.00	2.72	0.65	0.97	−0.30	−0.12	0.23
	(1.68)	(1.51)	(1.67)	(1.54)				

Notes: Standard deviations are given in parentheses. Means in the same row that do not share subscripts differ at $p < .05$ in Tukey's honestly significant difference comparison.

* $p < .05$; ** $p < .01$.

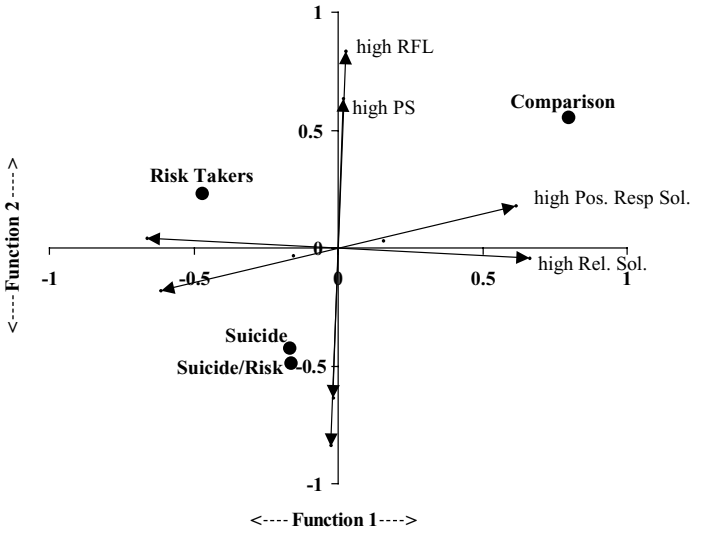


Figure 10.1. A plot of the group centroids for the four groups, showing the separation of the groups by the significant mediating variables on the first and second discriminant functions. RFL = Reasons for Living Scale; Rel. Sol. = Number of Relevent Solutions; Pos. Resp. Sol. = Positive Response to Solutions; PS = Problem-Solving Scale.

of appraisal of problem-solving skill, and the number of positive responses to solutions generated. The squared canonical correlation for this function of 72% indicates a very strong effect.

The second discriminant function, $\chi^2(16) = 44.6$, $p < .0001$, separates the two suicide attempter groups from the risk-taking and comparison groups, with the two suicide attempter groups scoring significantly lower on the RFL and the PS of the SPSI. The squared canonical correlation for this function of 39% indicates a strong effect. Figure 10.1 shows the group centroids with respect to the first and second discriminant function. It also shows differences between the groups, but it especially shows the closeness of the two suicide attempter groups on the mediating variables that define the first two discriminant functions.

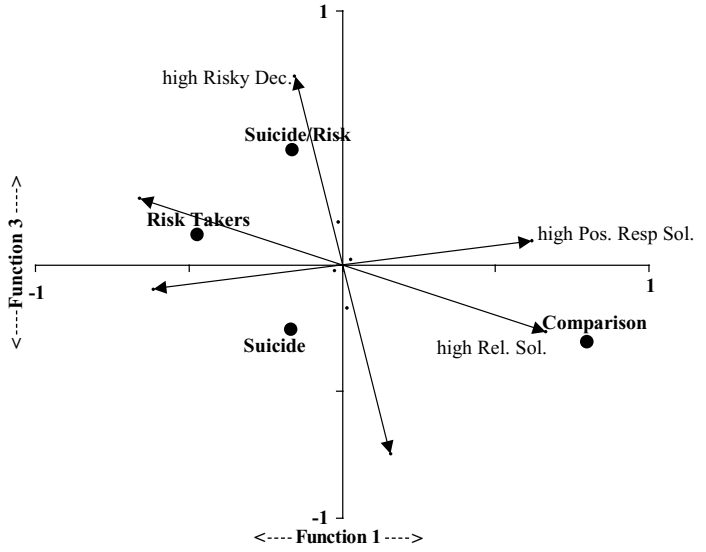


Figure 10.2. A plot of the group centroids for the four groups, showing the separation of the groups by the significant mediating variables on the first and third discriminant functions. Risky Dec. = Decisions taken to engage in hypothetical risk activities; Rel. Sol. = Number of Relevant Solutions; Pos. Resp. Sol. = Positive Response to Solutions.

The third discriminant function, $\chi^2(7) = 16.6$, $p < .05$, splits the two suicide attempter groups in terms of the number of risk decisions endorsed, with the combined suicide and risk-taking group significantly higher on this variable. This function separates both groups of risk takers from the suicide attempter and comparison groups. The squared canonical correlation for this function of 25% indicates a moderate effect. Figure 10.2 shows the group centroids with respect to the first and third discriminant functions.

Discussion

The purpose of the study was to test the relationship between the mediating constructs (problem solving, hopelessness, protective factors,

and decision making) and the independent or outcome constructs (suicidal and risk-taking behavior) in the S/RT model. The results indicate that there are different combinations of mediating variables that clearly differentiate suicidal and risk-taking behavior. Of importance was the clear demonstration that there are adolescents who not only have high levels of risk-taking behavior but also attempt suicide.

The adolescents who engage in serious risk-taking activities split quite clearly into a group of individuals who were also suicidal and depressive and a group of them who were not suicidal, although their mean score on the BDI was higher than that of the comparison group (see Table 4). This finding suggests that there are a significant number of risk takers also likely to engage in suicidal behaviors and develop depressive symptomatology.

It is also important to note that this suicide and risk-taking combined group displays more extreme scores on all scales than the other groups (see Tables 3, 4, and 5). This means that they endorse items to suggest that both their suicidal behaviors as well as their risk-taking behaviors are more extreme than either the suicide group or the risk-taking group. This is consistent with much research that has found comorbidity to suggest greater risk of suicide (Lewinsohn et al., 1996) and also research suggesting that aggressive and delinquent youths are affectively as well as behaviorally disturbed (Kosky et al., 1990a).

The findings from this study are not consistent with research that suggests that risk-taking adolescents are not depressed (Gonzalez et al., 1994). This only seems to be the case if the behaviors are "minor" in comparison with the risk-taking behavior of the two groups in this study. When adolescents with problem behaviors are the focus rather than serious risk takers, as in Chapter 9, the levels of depressive symptomatology in the adolescents are more similar to the comparison group than they are to the depressed group.

PROBLEM SOLVING

The discussion now focuses on the differences between the groups on the nine variables measuring the mediating constructs of the S/RT model. As in Chapter 9, problem-solving was operationalized as both appraisal of problem-solving skills and actual problem-solving skills. Appraisal of problem-solving was measured by the POS from the SPSI and the number of positive responses to solutions generated on the Social Situations Analysis Test; see Table 2 for the list of measures. Actual problem-solving skills were measured by the PS, the use of identifiable problem-solving strategies from the SPSI, the number of relevant solutions generated on the Means–Ends Problem-Solving Test and the Social Situations Analysis Test, and the number of irrelevant or aggressive solutions generated on the Means–Ends Problem-Solving Test and the Social Situations Analysis Test. While each these measures differentiated between the four groups using the univariate *F* ratios, the variables with the stronger, unique effect were the number of positive responses to solutions, the number of relevant solutions, and the PS. This adds further to the support from the previous study for problem solving as a mediating construct between psychopathology and suicide and risk-taking behavior as proposed in the S/RT model.

We expected that the suicide and risk-taking groups would generate fewer relevant solutions to problems than the comparison group, and this was clearly supported. These groups also had a lower positive response to solutions, which was not expected. Figure 10.1 shows these results clearly, as these two variables contribute most strongly to the first discriminant function.

These results are interesting because even though the problems in the Social Situations Analysis Test and Means–Ends Problem-Solving Test were perhaps not strongly related to the personal issues relevant to these particular adolescents, it is obvious that their

ability to generate alternatives and solutions and appraise them is impaired.

One might extrapolate from this result the possibility that when faced with a personal crisis, these adolescents will show a tendency to produce an even narrower band of alternative solutions (Mano, 1992). Many of these adolescents stated that they saw suicide as a possible option in solving their problems (see Table 4). If the option of suicide is seen as realistic and the adolescent is unable to generate other alternatives or appraise solutions, then the act of suicide becomes more understandable. The suicide attempt is likely to occur whenever a problem situation appears too difficult. This is consistent with the suggestion of Strosahl et al. (1992) that, for these adolescents, a suicide attempt may represent both an effort at problem solving and an expression of distress.

When we look at the responses on the PS, the use of identifiable problem-solving strategies, there were significant differences between the two groups containing suicide attempters and the risk-takers and the comparison group. Figure 10.1 shows how this variable contributes to the second discriminant function in separating the groups. The low scores obtained on this scale by the suicide groups suggest that not only do these adolescents feel that they cannot solve problems but they are also lacking in the skills and strategies required to solve problems. This was not the case for the depressed group described in Chapter 9, and it suggests that as behavior becomes more extreme the options narrow and any belief in the possibility of a solution to a problem, even in the hypothetical sense, is seen as too difficult and effortful a task to undertake.

This finding, although not expected, adds further to the profile of a depressed adolescent with little faith in his or her ability to solve even minor problems and an apparent lack of knowledge about how best to tackle a problem situation.

DECISION MAKING

The decision-making construct was operationalized as the number of risk decisions the adolescents said they would make given two hypothetical situations (riding with a drunk driver and taking an unknown drug at a party). We also measured their response to the False Alarm situation, which is a decision *not* to engage in a risk activity when there are no negative consequences. The content analysis of participants' responses to the False Alarm situation confirmed that the two main costs were negative reactions from peers or regret at missing out, and the importance rating was used to calculate the score on this variable. While there was a significant univariate *F* ratio for the response to False Alarm situation, it was not significant when other variables were taken into account. Inspection of Table 5 shows that the comparison group has a lower mean score than the other three groups.

However, the content analysis found that the individuals in the suicide Attempter and risk-taking combined group, instead of stating benefits associated with these activities, tended to say that they did not care about the consequences. This was a new reason and had not been evident in the comparison between depressive and problem behavior adolescents; nor was it present in the content analyses of the same task by Sofronoff (1999).

Conversations during the testing of the risk-taking groups with the researcher provided some examples of this reason. Some of these adolescents had been in trouble with the police, and this had become a way of life. Some felt that they would die young anyway and so taking risks was not of concern. One 15-year-old stated that, after an overdose when he had been hospitalized, he had received the best care and attention from nursing staff that he could recall ever receiving in his young life. He also said that, for him, this had been a positive aspect of a supposedly bad outcome from the drug use.

This information adds to the understanding of why these adolescents, who obviously are aware of the consequences of engaging in risk activities, continue to take risks. The presence of this reason may explain why the suicide and risk-taking combined group did not differ from the risk-taking group or the suicide attempter group on the numerical score for the response to the False Alarm situation, since the test scale did not include an "importance value."

As expected, there were differences between the groups on the number of risk decisions endorsed. Figure 10.2 shows that this variable clearly separates the suicide and risk-taking combined group from the suicide group. Both risk-taking groups were significantly higher than the comparison group on this measure.

PROTECTIVE FACTORS

The construct of protective factors was operationalized by the College RFL (Westefeld et al., 1992). Figure 10.1 shows that this variable is strong in differentiating the suicidal groups from the nonsuicidal groups. This scale is useful in that it looks at suicide from a different perspective. It asks the adolescents to indicate what would stop them from attempting suicide if they were contemplating it. The results indicate quite clearly that those adolescents who have at some time attempted suicide, even though they are not currently suicidal, place a low value on beliefs that would prevent adolescents from attempting suicide if they were to consider it.

This finding suggests that RFL (Westefeld et al., 1992) may constitute a valuable predicting measure to use with adolescents believed to be at risk of suicidal behaviors. The findings in this study are consistent with results from other studies using the RFL (outlined in Chapter 5) and indicate its value with an adolescent population other than university or college undergraduates. The RFL may prove to be important as a mediating variable between depressive symptomatology and suicidal behavior.

HOPELESSNESS

Hopelessness was operationalized and measured by the Beck Hopelessness Scale (Beck et al., 1974). Although the univariate F statistic indicated that scores on the Beck Hopelessness Scale were significant, $F(3, 61) = 9.07$, $p < .0001$, the F-to-remove statistic, which indicates the unique contribution of the variable when all other variables are removed, was not significant. This tends to suggest that although suicidal and risk-taking adolescents did endorse more items on the scale than the comparison group, there are other variables related to hopelessness that more clearly differentiate them. This is discussed more fully in Chapter 11 when the model is assessed as a whole.

In summary, the results of this study indicate that adolescents who engage in suicidal behaviors can be discriminated from risk-taking adolescents and from "normal" adolescents on measures of problem solving, both in terms of attitude toward problem solving and actual problem-solving skills. They can be further discriminated by their responses on the College RFL. They have decreased capacity to approach problems positively but also to engage in positive strategies, and they place low value on reasons for living.

Adolescents who engage in risk-taking behaviors can be discriminated from other adolescents by their willingness to accept risk and by their decision making. They were also found to exhibit poor problem solving and to hold a belief that their solutions to problems would not work.

The group exhibiting combined suicidal and risk-taking behaviors was more extreme on all measures.

It was expected that the variables measured would discriminate between groups even more clearly than in the comparison between depressed and problem behavior adolescents. The reason for this expectation was that the adolescents participating in this study were expected to exhibit more severe deficits. When the means are compared with the earlier studies, this was found to be the case. However,

it was still not so easy to discriminate between the three suicide and risk-taking groups because the adolescents in these groups all tended to show a similar degree of impairment.

The next chapter brings the results from these two studies together and provides direct tests of the extent to which the variables mediate between depression and problem behaviors on the one side and suicidal and risk-taking behavior on the other.

11 The Impact of Cognitive Variables as Mediators

The research reported in Chapters 9 and 10 aimed at demonstrating the relationship between the cognitive constructs in the S/RT model and depressive symptoms and problem behaviors (Chapter 9), and the cognitive constructs and suicide and risk-taking behaviors (Chapter 10). The research used between-group comparisons to demonstrate the relationships. The data analyses reported in this chapter directly test whether the nine cognitive variables mediate between depressive symptomatology and problem behaviors on the one hand and suicide and risk-taking behavior on the other. It uses path analysis to do this.

An advantage of the group comparison approach is that, by looking at the mean scores of the groups across the nine cognitive variables and the screening variables, we can make a cross-study comparison. There were three groups in the first set of analyses (Chapter 9) and four groups in the second set (Chapter 10). There was a comparison group in each study. The results from these two comparison groups can be pooled since a discriminant analysis found they were not significantly different from each other.

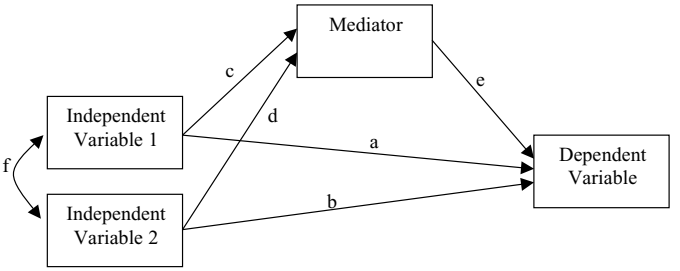


Figure 11.1. Path diagram for the effect of the mediator with two independent variables.

Path analysis (see Figure 11.1) is an extension of multiple regression that allows one to simultaneously assess the relative importance of two or more independent variables while testing for the influence of a mediating variable.

All the paths, direct and indirect, can be tested for statistical significance. Structural equation model programs such as EQS (Chou & Bentler, 1995) perform this analysis and test the paths for significance. They also calculate the amount of variance in the dependent variable accounted for by the independent variables and the mediator. We present the results of three sets of path analyses. The first set has suicidal behavior as the dependent variable, and depression and problem behaviors as independent variables for each of the nine mediating variables. The second set has risk-taking behavior as the dependent variable, and the third set has suicidal and risk-taking behaviors combined as the dependent variable.

The data being used in the path analyses are those presented in Chapter 10 ($N = 66$). These were the only participants who actually engaged in the behavior measured with the dependent variables, that is, suicidal behavior, serious risk-taking behavior, and suicidal and risk-taking behavior combined. The adolescents who took part in the earlier research (Chapter 9) exhibited symptoms of the two independent variables, that is, depressive symptomatology and

problem behaviors, but had not made a suicide attempt or engaged in risk-taking to a level serious enough to have suffered legal consequences. Therefore, while Chapter 9 allows for an examination of variables associated with suicidal and risk-taking behavior and allows for components of the model to be examined, it is only the data from Chapter 10 that can be used to test the mediational ability of the proposed mediating variables.

The Paths to Suicidal Behavior

A path model (Figure 11.1) was fitted for each proposed mediator. These mediators were problem-solving appraisal measured by the POS of the SPSI (D'Zurilla & Nezu, 1990) and the positive response to solutions from the Social Situations Analysis Test (Connolly, et al., 1992), problem-solving skills measured by the PS of the SPSI, number of relevant solutions generated and number of irrelevant or aggressive solutions generated (Means–Ends Problem-Solving Test and Social Situations Analysis Test), hopelessness measured by the Beck Hopelessness Scale (Beck et al., 1974), protective factors measured by the College RFL (Westefeld et al., 1992), and decision making measured by the number of risk decisions participants were willing to make during the assessment and responses on the False Alarm scenario. The dependent variable was the score on the SBS. The independent variables were the BDI scores and a composite score of behavior problems formed by averaging the standardized scores on the number of risk activities (Perception of Risk Scale, Benthin et al., 1993) and the Substance Use Scale.

For the nine path models fitted, each accounted for a different amount of the variance of the SBS, the dependent variable. The mean amount of variance accounted for was 38%, with the lowest at 34.4% and the highest at 51.4%. All are highly statistically different from

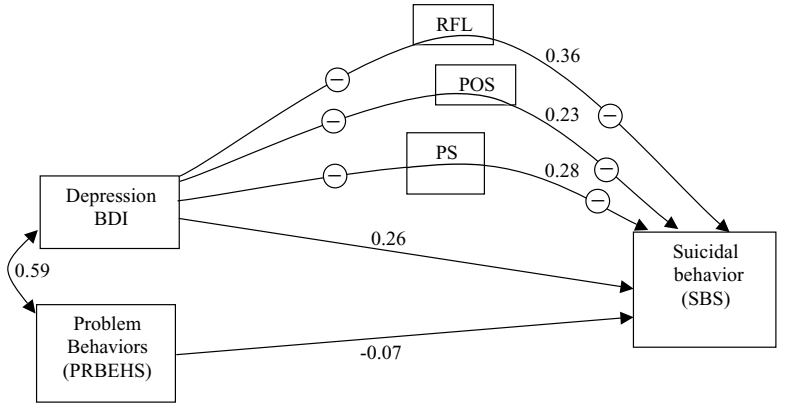


Figure 11.2. An illustration of the mediating variables, showing both direct and indirect effects of depressive and problem behaviors on suicidal behavior. A minus sign on an indirect path indicates a negative relationship between two variables.

zero. These are substantial amounts of the variance of suicidal behavior to account for.

Three of the cognitive variables had statistically significant mediating effects. Figure 11.2 shows them and the magnitudes of the direct and indirect effects. The curved line through the mediator indicates the amount of mediation and is the product of the paths from the BDI scores to the mediator and from the mediator to SBS scores. The three indirect effects from depression to suicidal behavior, the paths through the mediators, are all positive and significant at $p <$ .008, and they are larger than the average direct effect from depression to suicidal behavior. None of the direct or indirect paths from problem behaviors was significant. The magnitude of the paths takes into account the relatively high correlation (.59) between depression and problem behaviors. The direct effect of 0.26 indicates that the higher the (depression) BDI score, the higher the (suicide) SBS score.

Problem solving is an important mediator, both in the form of skills and negative problem-solving appraisal. The POS is a measure of problem-solving appraisal and the PS is a measure of actual

problem-solving skills and strategies that the adolescents indicate they are able to use. The other important mediator is the Survival and Coping Behavior subscales of the RFL. Low problem-solving skills (PS) or negative problem-solving appraisal (POS) or low reasons for living appear to increase the likelihood of suicidal behavior. High depression (BDI) scores are associated with low reasons for living and with low problem-solving skills and negative appraisal of problem-solving ability. A low score on these three mediators is associated with higher levels of suicidal behavior as demonstrated in higher SBS scores. An inspection of the items on the Survival and Coping Behavior subscales of the RFL shows that some of the items are close in meaning to problem-solving appraisal, such as "I believe I can cope with my problems" and "I have confidence in my ability to deal with problems."

The Paths to Risk-Taking Behavior

A set of path models such as that of Figure 11.1 was fitted for each of the nine mediators, with the dependent variable being the score on the RTBS. Four of the cognitive variables were significant mediators between depression and problem behaviors and risk-taking behavior. For the nine path models fitted, each accounted for a different amount of the variance of RTBS, the dependent variable. The mean amount of variance accounted for was 37%, with the lowest at 33.3% and the highest at 45.1%. All are highly statistically different from zero. These are substantial amounts of the variance of risk-taking behavior to account for. Figure 11.3 shows the magnitude of the direct and indirect effects (amount of mediation) for these four cognitive variables.

The direct effects of depression and problem behaviors clearly show that depression does not have a direct effect on risk-taking

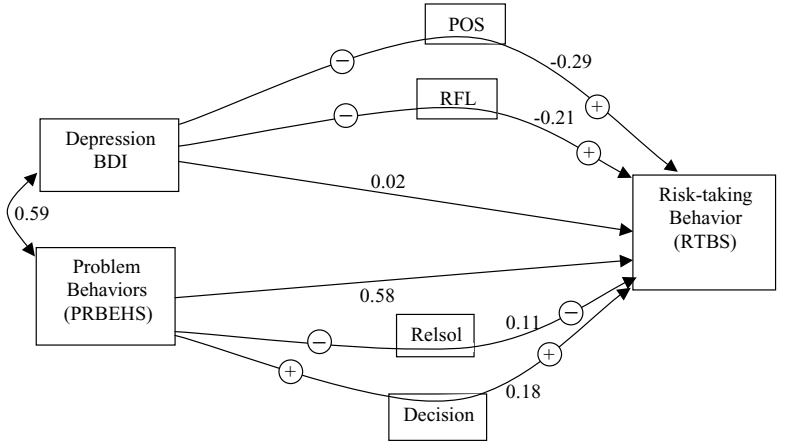


Figure 11.3. An illustration of the mediating variables, showing both direct and indirect effects of depressive and problem behaviors on risk-taking behavior. A minus or plus sign on an indirect path indicates a negative or positive relationship, respectively, between two variables. Relsol = relevant solutions.

behavior. It is not surprising that the measure of problem behaviors does have a direct effect on risk-taking behavior, such that the higher the problem behavior, the higher the risk-taking behavior.

There is an interesting pattern with the four significant mediators, with some positive and negative indirect effects. Problem-solving skills, as measured by the number of relevant solutions generated, and decision making, the number of risk decisions that participants were willing to make, exert an influence on risk-taking behavior. High scores on problem behavior are associated with a lower number of relevant solutions; low scores on this mediator are associated with a high RTBS score. Thus, having good problem-solving skills appears to reduce the effect of high problem behaviors. A high score on problem behaviors is associated with a high score on the number of risk decisions, and a high score on this mediator is associated with a high RTBS score. Thus, a tendency to make risk decisions increases the effect of problem behaviors on serious risk-taking measured by the RTBS.

However, the path analyses show that there are two mediators, reasons for living and appraisal of problem solving (POS), between depression and risk-taking behavior with negative indirect effects. Depression is linked to risk-taking behavior in an interesting way. The negative indirect effect means that a high score on the BDI is associated with a low RFL score and a low RFL score is associated with a low RTBS score. There is a similar interpretation for positive appraisal of problem solving (POS). The more depressed the person, the lower his or her positive appraisal of problem solving; the lower the problem-solving appraisal, the lower the risk-taking behavior. Thus, a high score on depression acts to lower risk-taking by means of a low score on the RFL or a low score on positive appraisal of problem solving.

The Paths to Risk-Taking and Suicidal Behaviors

A set of path models such as that of Figure 11.1 was fitted for each of the nine mediators, with the independent variable being the average of the standardized score on the RTBS and the standardized score on the SBS. The reason for including the combined score was to find out the important mediators for those adolescents who engage in both behaviors. While one might expect that the findings from this set of path analyses should be like the "average" of the patterns shown in Figures 11.2 and 11.3, the results were more complex than this (see Figure 11.4).

Four of the cognitive variables were significant mediators between depression and problem behaviors and risk-taking and suicidal behavior. For the nine path models fitted, each accounted for a different amount of the variance of suicidal and risk-taking behavior combined, which was the dependent variable. The mean amount of variance accounted for was 52.6%, with the lowest at 51% and the

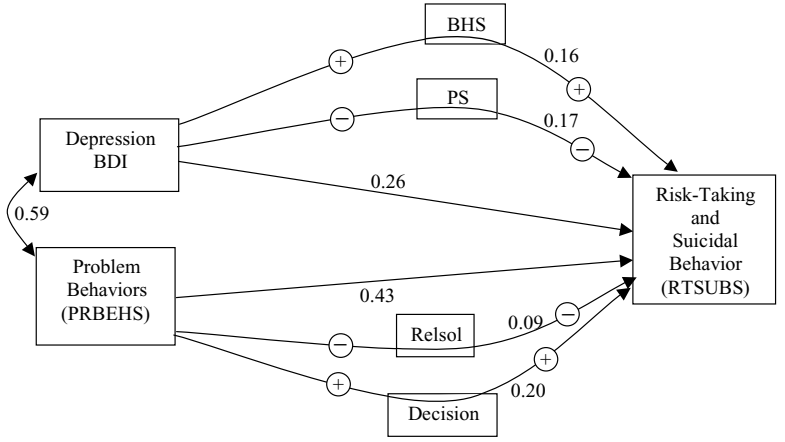


Figure 11.4. An illustration of the mediating variables, showing both direct and indirect effects of depressive and problem behaviors on risk-taking and suicidal behavior. A minus or plus sign on an indirect path indicates a negative or a positive relationship, respectively, between two variables. Relsol = relevant solutions; BHS = Beck Hopelessness Scale.

highest at 56%. All are highly statistically different from zero. These are substantial amounts of the variance of risk-taking and suicidal behavior to account for. Both depression and problem behaviors have a direct effect on risk-taking and suicidal behavior, with problem behavior having the larger effect.

In the separate path models for suicidal behavior and risk-taking behavior (Figures 11.2 and 11.3), appraisal of problem solving was a significant mediator. When the focus is on the combination of serious risk-taking and suicidal behavior, hopelessness is a significant mediator from depression to risk-taking and suicidal behavior. A high score on the BDI is associated with a high score on hopelessness, and a high score on hopelessness is associated with a high score on risk-taking and suicidal behavior. Problem behavior indirectly influences risk-taking and suicidal behavior by way of decision making. A high score on problem behaviors is associated with a high score on the number of risk decisions, and a high score on this

mediator is associated with a high risk-taking and suicide behavior score.

The problem-solving skills variable is again an important mediator. Two measures of problem-solving skills, the number of relevant solutions generated and the PS of the SPSI, influence risk-taking and suicidal behavior differently. For the PS, a high score on the BDI is associated with a low score on problem solving and a low score on problem solving is associated with a high score on risk-taking and suicidal behavior. For the number of relevant solutions generated, a high score on problem behaviors is associated with a low score on the number of relevant solutions, and a low score on this mediator is associated with a high score on risk-taking and suicidal behavior. This result may be a reflection of the different ways data were collected for these two variables. The PS score is a scaled score from a questionnaire passively filled out, whereas the number of relevant solutions generated is from a task in which participants actively generate solutions. Depression may impair performance on the questionnaire, whereas problem behaviors may impair performance on actively generating responses.

Conclusions

The research and data analyses reported in this and the previous two chapters show detailed support for the S/RT model. The cognitive constructs of problem solving, decision making, hopelessness, and protective factors are strongly related to both depressive symptoms and problem behaviors and to the outcome constructs of suicidal and risk-taking behavior. The path analyses reported in this chapter added to our understanding by finding which of these cognitive variables are mediators. These analyses have added to our understanding of the fine-grained differences between groups shown in

Tables 4 and 5. For example, the results reported in Chapter 9 show that the response to False Alarm situations clearly differentiated the problem behavior group from the depressed and comparison groups. Thus, motivations for taking risk decisions, regret at missing out, and the negative reactions of peers are important, even when there are no differences in the number of risk decisions taken.

Figures 11.2, 11.3, and 11.4 show how negative appraisal of problem solving and lower reasons for living increase the effect of depression on suicidal behavior, whereas for risk-taking behavior the effect is to make the relationship between depression and risk-taking behavior negative. The effect of these two mediators depends on the "target outcome behavior." These two cognitive mediators work with depression so that if adolescents are depressed and have low scores on them, then the tendency is toward high suicidal behavior but lower risk-taking behavior. On the other hand, if adolescents are not depressed and have high scores on the POS (problem-solving appraisal) and RFL, then the tendency is toward higher risk-taking behavior but lower suicidal behavior.

Problem-solving skills is also an important mediator and works differently depending on whether the target outcome behavior is suicidal behavior, risk-taking behavior, or the combination of these behaviors. Deficits in problem-solving skills together with high problem behaviors or high depression increase the tendency for each of the target outcome behaviors.

Hopelessness mediates between depression and combined suicidal and risk-taking behavior and adds to the effect of depression on this combined target behavior. It is particularly interesting to find that hopelessness is not supported as a mediator between depressive symptomatology alone and suicidal behavior. This may account for the inconsistent findings regarding the efficacy of hopelessness as a mediator in adolescent suicidal behavior in the literature reviewed earlier. The results may simply depend on the populations

that were accessed. Those adolescents who made up the suicide–risk-taking group were more seriously disordered than any other group, both in terms of the number of deficits they exhibited and in terms of the severity of those deficits. This finding supports literature that has suggested comorbidity increases the risk of suicide (Lewinsohn et al., 1995), but it also extends these findings by illustrating how this risk is affected through the cognitive mediating variables reported in this chapter.

It is also interesting to find that the construct of decision making was useful as a mediator between problem behaviors and risk-taking and suicide–risk-taking behaviors. This is a construct that has not previously been used with suicidal adolescents. Its use in this research has extended the work completed by the Fischhoff group (Beyth-Marom et al., 1993; Quadrel et al., 1993) with adolescent delinquents and risk takers. It has illustrated not only that these adolescents take risks with their lives but also that they are aware that they are doing so and have reasons that they can articulate. As suggested by Furby and Beyth-Marom (1992), these reasons have more to do with the loss anticipated from *not* engaging in the activities than from any actual benefits, although peer influence is also a major factor and the risk-taking adolescents do endorse more benefits from engaging in the risk activities than do the non-risk-taking adolescents.

IMPLICATIONS FOR TREATMENT

12 Clinical Implications: The Development of Problem Solving

So far, we can summarize our findings as follows: We found that both suicidal and risk-taking young people demonstrated cognitive deficits. In meeting challenging problems, they generated only a narrow range of options as possible solutions and their capacity to develop alternative solutions was impaired. Furthermore, the options they did generate were likely to be irrelevant for the solution of the problem or were likely to be aggressive responses to the challenge. Neither suicidal nor serious risk-taking adolescents seemed to care about the consequences of the choices they made. Risk takers were more influenced by their perception of likely reactions from their peers and suicidal adolescents were not protected by beliefs that life had value.

Suicidal adolescents demonstrated less confidence in their ability to solve problems correctly or in the likely success of the solutions they generated than either risk takers or asymptomatic adolescents. In fact, when put to the test, they were less able to solve hypothetical problems than were normal adolescents. They lacked the skills and strategies required to reach workable solutions.

Such cognitive deficits in adolescents may make them vulnerable to developing a single all-encompassing solution when they are dealing with a challenging problem. Their solution may not be an adaptive one. Suicide, as a simple solution, becomes a possibility when the individual fails to generate other solutions or when the individual does not have confidence that any other solution is workable.

Risk-taking adolescents also showed deficits in their ability to generate solutions. They produced more irrelevant and aggressive responses than normal adolescents. These young risk takers were willing to take a risk with their future in order to remain connected to their peer group. Despite this, they espoused beliefs that they valued their lives. Thus their solutions or decisions were gambles against the odds of staying connected to the peer group while risking their future.

What are the clinical implications of these findings? The cognitive skills we identified, or deficits in them, are factors mediating on the one hand between depressed and suicidal states of feeling, and, on the other, between conduct disordered behavioral states and serious risk-taking behaviors. Therefore, they are points for potential interventions to prevent suicide and self-destructive behaviors in adolescents. If prevention interventions are to be developed for vulnerable young people, it is worthwhile to consider how these cognitive skills develop, in humans, and where and how deficits might occur in them.

The Development of Problem-Solving Skills

One way of defining problem solving is that it is the capacity to create potential mental solutions to problems in order to effect changes in a state of affairs, currently existing, toward a more desirable condition (Meadows, 1993). To do this, mental processes generate a range

of potential solutions. The effectiveness of these possible solutions to bring about the desired change is first judged mentally in a hypothetical form. The one judged most likely to be effective or workable as a hypothesis is then applied in practice. Other solutions are tried if this one fails. The most effective solution is stored in memory for future use. Noneffective solutions are discarded.

The cognitive processes involved in this process of problem solving develop in the human brain from an early age. The main groundwork for the organization of problem-solving cognitions occurs during infancy. The five processes involved are the development of the capacity to symbolize, the mental capacity to control emotions, the development of a moral sense, the capacity for verbal conceptual memory, and the capacity to maintain constancy in behavior (Sardonoff, 1989).

SYMBOLIZATION

According to Piaget (1968), the ability to create symbols occurs between the ages of 15 and 24 months. During this time, infants move from dealing with objects in their minds that are unmodified versions of the real object, to playing with these mental images. This involves giving the original image new meanings. Once this occurs, symbols can be developed.

The development of the capacity for symbolization depends on the emergence of the abilities to recognize similarities and differences between objects. It also depends on the capacity to displace meaning from one object to another. Because of the measure of delay involved when holding images in the mind, there is the opportunity for these images to be influenced by feelings arising from needs, desires, and moods. For instance, Klein has suggested that one powerful need in infants is for them to protect the primary caregiver from self-generated (infant) aggressive urges (Hinshelwood, 1991, p. 216). The infant mentally displaces such urges symbolically onto the breast

during feeding, and they are manifest in crying and tantrums when the feeding breast is removed.

Disturbances in the mother–infant relationship, inconsistent responses to the baby's sounds and gestures, and aggression or lack of affection may disturb the development of the capacity for symbolization or come to reside in the symbols themselves and disturb later relationships. Interventions in the perinatal period to ensure psychological and social well-being may be an effective early intervention. Fonagy and his colleagues have described the value of the development of meaningful narratives about one's life as providing resilience for mothers and babies (Fonagy et al., 1994).

MEMORY

The capacity to memorize underlies the ability to solve problems. The cognitive organization of memory occurs in infancy and childhood and develops with the progress of intelligence as a whole. Intelligent thought is built up as a progressive transformation of mental activity that becomes steadily more adaptive to the environment, giving increasing mastery over the self and more controlled management of environmental experiences.

According to Piaget's (1968) schema of mental development, the earliest infantile mental activities are based on reflex actions to environmental stimuli. This sensorimotor stage persists as an important modality until around 2 years of age. A preoperational stage follows, in which thinking occurs; although intuitive thoughts also begin to develop, thinking at this stage is mostly action orientated. This stage lasts until about 7 years of age. From then until the beginning of adolescence, thought processes become dominated by concrete operations that are built on the capacity to deal in a formal way with logical categories, classes, and rules.

During adolescence, the capacity to think ahead develops much more fully. The young person can use this skill to try out various

hypotheses as potential solutions to problems and problem-solving skills can be more fruitfully employed. These processes do not develop in isolation. Piaget (1968) emphasized that the processes of mental development are a "basic unity," from

> the construction of the practical universe by infantile sensorimotor intelligence, . . . to the reconstruction of the world by the hypothetico-deductive thinking of the adolescent, via the knowledge of the concrete world derived from the systems of operations of middle childhood. (p. 69)

Memory, as a system, stores information during this learning process and brings it back into consciousness when it is needed. Memory function depends on the ability to give close attention to pattern recognition. The capacity for selective attention can be impaired as a result of immature development of the higher executive functions of the brain, as in attention deficit hyperactive disorder (ADHD; Barkley, 1997). Individuals with this impairment may experience problems learning and retaining new material, and this may affect the orderly development of mental processes.

Memory has short- and long-term faculties that are probably distinct processes. Short-term memory may be mainly contained in an electronic state in the brain, whereas long-term memory may depend on the structural integrity and function of the hippocampus area. This long-term memory is better developed in humans than in the nonhuman higher species of animals. Structural damage to these areas of the brain can interfere with the development of long-term memory capacity. Typically, this occurs during fetal development or at birth, as in fetal alcohol or drug syndromes, or is acquired through injury or infection. The role of alcohol in producing later memory and other cognitive deficits requires greater consideration, especially among socially disadvantaged mothers and indigenous populations (Hunter, 1993).

Memory is strongly affected by events and is susceptible to feeling states, suggestions, bodily sensations, and the general condition of other cerebral functions. It is therefore a dynamic construct and subject to modifications and distortions over time. A child's memory may be particularly unstable (Leichtman, Ceci, & Morse, 1997) and will be made more so by adverse historical events (Anthony, 1983).

Adolescence includes rapid physical changes, which are accompanied by corresponding changes in the mental map of the body. There is intensification of interest in the self, rather than others, and there is intensification of old and new personal relationships. New figures are sought for bonding, and these to some extent replace the primarily bonded parent figures. Such transitions are complex, and successful passage through them is dependent on a consistent facilitating environment and good physical health.

These changes in adolescence are accompanied by increased introspective thinking. The broadening of problem-solving scenarios and the capacity to develop new types of solutions based on the acquisition of a wider range of new and memorized knowledge is a part of the developing hypothetico-deductive thinking patterns. These thinking processes allow for testing possible solutions in a virtual (mental image) situation rather than in a real setting. When accompanied by these new thinking capacities, adolescent experimentation in imagined life and in real life should promote a deeper understanding of the consequences of an individual's own actions.

MORAL REASONING

Adolescents should be able to demonstrate an ability to solve problems with an understanding of the possible consequences to self and others. Such moral reasoning begins in the home, and the development of a moral sense begins in infancy.

At first, the infant and child adheres to the moral rules laid down by the parents, who represent a higher authority. This adherence is motivated by the infantile wish to placate and to please the parents. The responses to moral problems based on these external rules are all or nothing, black or white. The parents need to maintain fair, firm, and consistent limits on the child's behavior so the child can begin to socialize within his or her limits.

As the child grows, he or she experiences wider influences from socialization beyond the parent–child triadic complex. This may include contact with other adults and children in child-care situations, extended family members, and other families. Wider influence leads to the sharing of perspectives from which arises a desire for cooperation. These developments reach their fruition at about the time the child is ready for school. At this time, children should be able to play together, share, compromise, and cooperate. All-or-nothing responses are inappropriate in a social, school situation.

A socializing child needs to develop working solutions to the problems of sharing on a day-to-day basis. School now becomes an important source for learning these skills, but it does not replace the parents' authority. In these circumstances, the child needs the capacity to develop reciprocal relationships among his or her peers. Ideally such relationships will be based on mutual respect, rather than on unilateral attempts to placate peers, or to draw admiration from them out of fear of loss of their companionship, as would be the case at an earlier period of development.

By about the eighth year of life, moral decision making develops. Moral decision making is guided by a sense of internalized guilt rather than by obedience to parental rules. At this stage, the child has developed mental images of the external parental rules and of what behavior is expected of him or her by parents, peers, and the social structure of school. The construct of acceptable behavior becomes governed by the internal rules controlled by guilt. Thus, the

individual should reflect on actions that reduce his or her feelings of guilt in order to make "right" decisions in the absence of the peer group, parents, or explicit social rules.

Advanced capabilities, such as remembering, planning, categorizing, evoking of memory, and abstract testing of solutions, reach maturity during adolescence. These cognitive developments enhance problem-solving skills and become central to formulating effective solutions. Skills such as literacy, numeracy, and general knowledge about the world extend the individual's capacity to broaden the basis of his or her potential solutions. These skills allow exposure to the previous experience of others that is contained in texts and in visual and aural images, thereby further enhancing the capacity to solve new problems. Failure to develop these skills limits options and approaches for problem solving in the future.

DEVELOPMENTAL INTELLIGENCE

Since every person has different innate capacities and different individual experiences during his or her development, each person's capacity to solve problems will be different. As a result, some people will be handicapped in problem solving compared with others because their innate capacities will be relatively deficient or their relative experiences limited to a nonfacilitating environment. This does not mean that they cannot learn new skills.

The nature of genetic variations contributes to expectations of a wide range of cognitive development across the population. We see this range in the typical bell-shaped curve of scores measured by standard cognitive assessment instruments such as the Wechsler Intelligence Scale for Children (WISC). Slow or limited development of the cognitive phenotype in some individuals compared with others in the same population may be a result of genetic variations or chromosome anomalies, such as found in Down's syndrome.

Some facets of cognitive development might be weaknesses in certain situations, but strengths in others. For example, ADHD may be a considerable disadvantage in the classroom, where rule breaking and distractibility are unacceptable, but, on a battlefield or in sport, such apparent weaknesses may become strengths and, in the former case, add to the survival value of the group (Barkley, 1997).

A further domain of difficulty with problem-solving development occurs when education and life experiences fail to provide the knowledge with which problems can be solved effectively. The development of numeracy, literacy, and general knowledge provides the foundations for the memory of concepts. This creates possibilities for a wide range of potential solutions to challenges. In the absence of skills in these areas, and the failure to build up a bank of knowledge of potential solutions, the capacity to generate solutions will be greatly restricted and will tend to be self-referential rather than based on the wider experience of others. Solutions will tend be repetitive without reference to the problem, because they will be based on a few, personalized pieces of knowledge, special to the individual, that have become highly valued.

CONSTANCY OF EMOTIONS

Inadequate early nurturing may reduce the degree of stimulation that is required to acquire a broad-based experience of the real world. These negative experiences intensify emotions by increasing frustration and rage (Bowlby, 1988). Such feeling states can disrupt the acquisition of problem-solving developmental patterns. For instance, prolonged experiences of inadequate nurturing may persistently narrow options and direct solutions down pathways of aggression. This disrupted thinking style was evident in the conduct disordered adolescents we considered earlier.

Inadequate early socialization experiences may also restrict the range of alternative solutions available to the individual when the

problems to be solved have a social dimension: The development of independence in response to rules may be inadequately internalized. This may leave an individual more than usually dependent on the approval of peers or sensitive to rejection from the peer group.

CONSTANCY OF BEHAVIOR

If rules are inconsistent from the very beginning and the limits provided by parents and others on behavior are unclear or ambivalent, the developing child will fail to internalize a consistent set of rules and therefore will not develop constancy of behavior when left to his or her own resources. Instead, as the child comes into adolescence, loosening ties with his or her parents and in the face of different external values, the child's behavior will become increasingly erratic.

A vicious circle may develop in these circumstances: The development of morals will be hampered by behavioral inconstancy. Sharing, compromising with peers, cooperative behavior, and the capacity to stick with tasks will also all be adversely affected by behavioral inconstancy. A heightened desire for attention from peers and fear of losing their respect will replace the more adaptive development of mutual respect among others. Thus, problems will tend be solved in a way that will reflect these fears and needs, rather than a steady sense of right and wrong or a desire for mutual adaptability. We have identified aspects of this vicious circle. Those adolescents trapped in this negative pattern need to be identified and given skills to extract themselves so that their development and maturation can progress on a more positive footing.

13 Clinical Implications: Intervention and Resilience Building

Specific attempts to improve adolescent problem-solving capacities can be approached on two different levels. The first level is a universal intervention across a population. This would aim to increase personal resilience to developing depression and conduct disorder among the individuals in that population. The advantage of such programs is that they help a wide range of young people, not specifically those who are at risk. However, this may also represent a gross misallocation of resources since they target many adolescents who may neither need nor benefit from the intervention.

The second approach involves selective interventions, targeted at children who are already symptomatic, with a view to preventing the outcomes of suicide and risk-taking. These programs target resources on identified at risk individuals, thereby conserving them. However, there may be negative long-term consequences for a group of young people so specifically identified and perhaps labeled.

A brief review of some currently available programs may indicate ones that could be usefully employed to prevent suicide and risk-taking in a predisposed adolescent through the modification of

cognitive variables either during the individual's development or once he or she has been identified as being at risk.

Programs to Improve Problem-Solving Skills

There are several programs that have been developed to improve problem solving by training children in this skill. One example of this type of program is the Problem Solving for Life Program (PSLP). The purpose of this program is to enhance problem-solving skills in young people. The PSLP requires that high school students work in groups. In one of the activities, students are provided with puzzle pieces that have positive or negative phrases written on them. Each group then decides where the puzzle fits on a poster. On a positive poster, there is movement from the problem toward thinking ("it's a challenge, at least try"), to feeling ("good feelings, excitement"), to doing ("relaxing, thinking clearly, possible alternatives"), leading ultimately to an effective solution. In a similar way, on the negative poster unhelpful thoughts lead to negative feelings and a poor solution outcome. It is made clear that not all problems have solutions and coping with doubt is seen to be a positive outcome (Spence & Sheffield, 2000).

The PSLP also provides information about where to go for support when problems seem unmanageable. This is an important aspect of any program making a universal intervention. Despite the best intentions of the program, some children will be better at the work than others. Some will still have difficulty in solving problems. For these children, it is important that real-life information is available when their problem-solving skills fail to meet the challenge.

Earlier, we saw that many young people who identified themselves as having mental health problems did not obtain help. A lot of these young people feel they can manage the problems themselves.

These apparently "self-managing" young people may only generate restricted solutions to their problems and may not see potentially helpful alternative solutions. Improving the problem-solving skills of these young people through such programs may lay the foundations for the development of a wider range of possible solutions, including asking for help.

Another program for training in problem solving applied on a universal scale is the I Can Problem Solve Program (ICPS). This is an interpersonal cognitive program for children. The ICPS was designed to teach children to think in ways that will help them to resolve interpersonal problems successfully. This program is aimed at children in preschool or primary school and was designed to improve children's behavior through cooperation.

The intervention elements include teaching problem-solving vocabulary ("might–maybe, why–because") and thinking skills ("listen, concentrate, consider") that are needed in approaching a problem. The program also directly teaches problem-solving skills and strategies ("causes, possible solutions, consequences, choice") and techniques for avoiding negative outcomes ("upset, aggression, withdrawal, impulsivity").

Unusual among universal preventive programs in mental health, the ICPS has been evaluated. The results are encouraging given the complexities of field research and evaluations in this area. Behavior and coping skills improved among the test children, and these effects were generally lasting (Shure, 1996).

Challenging Outdoor Programs

Programs with a broader approach place volunteers in challenging real-life situations, somewhat outside their usual experience and knowledge. Wilderness challenge programs are the most well known

of these programs. They occur in many different forms, from scouts, through army cadets, to outward-bound challenge programs. Wilderness adventures, residential and adventure camps, tall-mast sailing, summer camps during the school breaks, and many other variations of these out-of-school programs have become a traditional part of the experiences offered to young people throughout the U.S.A. and other parts of the world. They are regarded as having a formative influence on an earlier generation of young Americans (Goodman & Stoehr, 1978). Such programs remain significant for many young people across the world, and outdoor pursuits have often been built into school curricula.

The School Culture

The general culture of a school is a powerful influence on the improvement of problem-solving capacity (Oeser, 1960). School is a prime place for the acquisition of knowledge and represents society in miniature. Three figures stand out as playing a critical role in the development of the child's capacity to deal with the challenges thrown up by life. They are the mother, the father, and the teacher. If these figures are experienced as nurturing, loving, benevolent, and wise, and if they are devoted to maintaining the self-esteem and integrity of the child, then the child will most likely grow up able to effectively regulate his or her own behavior in the context of the society. If these figures are experienced as punitive, denying, and frustrating, then the child is either likely to grow up having a submissive, passive set of attitudes or to be rebellious and destructive.

Children attend formal school at around 5 to 6 years of age. Most have learned to understand rules by this time and have learned to cooperate in play with their peers. In the formal setting of the school,

a child's learning is affected by the qualities of the teacher. This includes both his or her human qualities and the professional skills that the teacher brings to the classroom. Good schools have committed teachers. Committed teachers are able to encourage children to do well with their academic work, help develop their intellectual skills, and encourage them to progress socially in the presence of their peers (Rutter, 1983). The school culture offers an important avenue for developing problem-solving skills, decision-making abilities, and beliefs to improve resilience.

In the classroom, interest in learning is generated and sustained by social interactions between the children as much as between the child and the teacher. The teacher's professional skills should allow him or her to present material in a way that is easily assimilated yet challenging and motivating to the child. As the child progresses through school, the child gains in literacy, numeracy, and general knowledge, and these skills form the basis for his or her future capacity to solve problems effectively.

Some children, for a variety of social and personal reasons, miss out on education. This means they miss out on acquiring many of the skills necessary to solve problems in an effective and adaptive way. Some learn maladaptive methods on the street. There has been recent and belated recognition of how much of a disadvantage this can be to young people in today's society.

One example is mathematics. Robert Moses, who in Mississippi in the 1960s was a leader in the struggle for civil rights for African Americans, has since considered that the civil rights legislation was not, by itself, sufficient to make people free, if they do not have the skills to compete with others and to access their citizenship. He thought these skills were mainly learned at school and that most African-American children were at an educational disadvantage compared with white middle-class children. In particular, they lacked mathematical skills (Jetter, 1993).

Moses aimed to improve problem-solving skills through the Algebra Project. Algebraic concepts require a sense of the direction of things that allows greater application to everyday problems than simple arithmetic. Algebra Project students learned to think by tackling algebraic problems that arise in everyday life, such as negotiating an underground railway system. These types of activities are drawn as directional models, written down and talked about, and then translated into mathematical language and put into symbols. Algebra Project students puzzle away with these in order to ask the right questions and chart out a variety of solutions.

Literacy has a similar, perhaps even more apparent, role in problem solving. Greater flexibility in problem solving is created by greater use of word descriptions. Words allow for subtle variations in considering the personal impact of experiences. Limitations in the vocabulary possessed by an individual restrict the way experiences can be understood or interpreted, and this limits the possibility of thoughtful responses to problems.

As well, words enable reading, and reading, opens the way to the problem-solving activities of past thinkers. Inability to access past literature and to reference the thinking of other people that is held in books (now also on the Internet) denies an individual access to the rich variety of solutions that others have previously tried. Formal literacy instruction in schools and special encouragement to read at home are keys to opening these avenues for the developing child.

There is a direct relationship between poor vocabulary and poor literacy skills and heightened risk for conduct disorders and criminal behavior (Walsh, 1991). However, few programs have been developed for young people with emotional and behavioral problems that are aimed at increasing their literacy skills, apart from the special school curricula for "developmentally delayed" children.

Improving Problem Solving in Symptomatic Adolescents

Programs to improve problem-solving skills for adolescents with depression, conduct disorders, suicidal behavior, or risk-taking behaviors have not been a strong focus of activity in mental health. However, there are some important exceptions.

DEPRESSION

A preventive program for depression is the Penn optimism program developed by Seligman and colleagues at Pennsylvania State University USA in 1990 (Jaycox, Reivich, Gillham & Seligman, 1994). This program has been widely used in a number of variations. Games, comic strips, and role play are utilized to help children develop the link between thoughts and thinking styles and to encourage recognition of pessimistic thoughts. The aim is to replace the pessimistic thoughts with optimistic ones and to create children who have developed a sense of mastery, no matter what the situation. In one variant the children have contact with the program for 2 hours per week during the 12 weeks of school time.

Cognitive behavior therapy interventions and treatment with antidepressant medications have been subject to evaluation and have had components that have proved effective as clinical interventions against depression. Problem-solving techniques have rarely been used (National Health and Medical Research Council of Australia, 1999).

SUICIDE

There have been many programs aimed at youth suicide prevention. Universal prevention programs have aimed to ameliorate the effects of individual risk factors, family risk factors, community risk factors,

and those coming from the culture of home and school. Most universal programs have used educational approaches included in the school curriculum. These involve education about suicide, its symptoms, and its prevention, and they give directions for accessing treatment facilities. These programs are usually delivered in the classroom in the context of the health curriculum.

Most of the selective suicide prevention programs are aimed at individuals who have evidence of depressive symptoms or who have made suicidal gestures. These programs usually involve some form of cognitive behavior therapy and are generally combined with other forms of behavioral therapy, such as relaxation therapy or social skills programs. Other programs involve active follow-up for young people who have threatened or attempted suicide.

The Centers for Disease Control and Prevention in the United States of America reviewed 27 youth suicide prevention programs in 1992. None addressed issues of possible deficits in problem solving or decision making among the target groups of adolescents (Centers for Disease Control, 1994). A national stock take of early intervention programs for the mental health of young people operating in Australia in 1999 identified only one program that was specifically directed toward improving problem-solving capacities in young people. This was the Penn optimism program that was employed for prevention of depression in adolescents (Davis et al., 1999).

While it is not possible to do justice here to the huge range of youth suicide prevention projects that have been developed across the world in recent years, a careful examination of the written accounts of these programs shows that few of the universal programs, or of the more selective programs, have been directly aimed at developing problem-solving skills in adolescents (Kosky et al., 1999; National Health and Medical Research Council of Australia, 1999).

CONDUCT DISORDERS AND SERIOUS RISK-TAKING ADOLESCENTS

Marshall and Watt have made an extensive review of 21 programs that were specifically developed for children and adolescents with conduct disorders. They found that 14 of the programs had been adequately evaluated. Of the evaluated programs, 3 involved developing problem-solving skills as part of their interventions (Marshall & Watt, 1999). We briefly describe these programs.

One was a selective intervention aimed at children aged 10–12 years who were identified by teacher and peer ratings as underachieving and disruptive. Students ($N = 100$) were randomly assigned by classroom to the intervention group and to a control group. The intervention occurred in groups of six students and occupied two 1-hour sessions twice weekly over 12 weeks. The content included assertiveness and social skills training taught through games, role play, and interpersonal problem solving. The intervention group displayed improved interpersonal problem-solving ability and assertiveness, and increased popularity was noted in the intervention group immediately after the program and again at 1-year follow-up (Rotheram, 1982).

Another program was aimed at children aged 9 to 10 years who exhibited conduct disorders and aggression. Students ($N = 52$) were randomly assigned to the intervention group or to a control group. The intervention was school based and consisted of 26 individual sessions for 30 minutes plus 8 small group sessions. The content of the intervention included a cognitive behavioral program intended to inhibit distorted social perceptions in order to improve social problem solving. There was a decrease in aggression and improved peer relationships among the intervention group immediately and at 1-year follow-up (Lockman et al., 1993).

In another program, the Earl's Court social skills group, 40 aggressive and disruptive students aged 6 to 12 years were randomly

assigned to the intervention group or to a control group. The intervention occurred over one school term and included two 1-hour sessions per week for 12 to 15 weeks in groups of 6 students. The content of the intervention included social commentary programs with skills taught in problem solving, learning to recognize feelings, using self-control, listening, and following instructions. At 3 months there were fewer aggressive behaviors and better social problem-solving skills in the intervention group (Pepler, King, & Byrd, 1991).

The Rochester Social Problem Solving Program has been evaluated in Australia with students enrolled in primary schools. This program consists of social skills training and is based on the principle that children who have problems with their relationships are at increased risk for emotional and behavioral problems. The program was taught to children enrolled in Years 3 and 4 (aged about 8 years). The classroom teachers taught the program during school hours over a 20-week period. The program is based on cognitive therapy principles that aim to provide children with skills for recognizing feelings in themselves and others, generating a range of solutions to interpersonal problems, and understanding the consequences of their actions.

Intervention children had more positive relationships with their peers than children who did not participate in the program. However, this improvement was not maintained at 1-year follow-up. The investigators have suggested more actively including parents as a possible ways of improving the program (Sawyer et al., 1997).

SERIOUS RISK-TAKING

There have been a variety of programs devised for serious risk-taking young people, but few had been evaluated. McLaren (1992), who reviewed a wide range of these programs, considered that most programs did not seem to have any long-term effect and few had

been shown to be effective at all. She concluded that, of the many programs available for seriously delinquent youth, wilderness adventure programs probably were the most effective. They gave some participants greater confidence in their capacity to overcome challenges and to find new solutions to old problems.

In the drug and alcohol field, there are a number of nonmedication prevention programs described that may be effective in reducing alcohol and drug intake among adolescents. One of these is the ALERT program (Ellickson, Bell, & McGuigan, 1993). This is the largest intervention for the prevention of drug use that has been evaluated to date. A randomized, controlled trial of 6,527 school children participated in the evaluation. The intervention consisted of eight curriculum-based sessions in Year 7 (age about 12 years) with three booster sessions in Year 8. The interventions targeted social attitudes toward drug use and were designed to promote positive attitudes and skills to help young people resist peer pressures to use drugs.

The evaluation showed modest reductions in alcohol, marijuana, and tobacco use, but these reductions were not sustained in the long run. The findings suggested that better results could be obtained when peer leaders were used to reinforce the interventions.

Clinical Interventions

Standard therapeutic modalities for children and adolescents with emotional and behavioral problems usually involve some problem-solving component, even if this is not specifically acknowledged. The three most widely used psychological therapeutic modalities are cognitive behavior therapy, family therapy, and dynamic psychotherapy.

Cognitive behavior therapy programs typically involve multiple components. These include self-evaluation, cognitive restructuring,

activity scheduling, relaxation training, social skills training, and interpersonal problem-solving training. Techniques include problem identification, generation of alternative solutions, prediction of consequences of choices, and selection of the most appropriate strategies for problem resolution. This is the most specifically problem-solving clinical approach.

In clinical practice, cognitive behavior therapy is typically conducted on an individual basis and the composition of the program is usually tailored to individual needs. There are six published controlled studies of the effectiveness of cognitive behavior therapy in the treatment of adolescents who were diagnosed with depressive disorder or depressive symptoms. All report a significantly better outcome in the group receiving cognitive behavior therapy than in the control group (National Health and Medical Research Council, 1997, p. 71).

Family therapy is based on the assumption that psychological problems appearing in the young person are, at least in part, the result of broader disturbances in family. Family therapy is aimed at improving relationships and communications within the family. Some family therapy modalities are focused on solving day-to-day interaction problems that confront the family relationships. In this model, the aim is to get the family to work together as a group, cooperating and compromising in order to generate more potential solutions and to reach more effective answers to the problems they confront.

Group therapy for adolescents, once a common approach at all levels of multidisciplinary mental health activity, is now rarely used in clinical practice. This is perhaps a pity because, if it can be shown to be an effective preventative intervention, it has obvious cost benefits over individual casework. It involves a group of disorganized young people coming together under supervision and learning from each other and from therapeutic relationships formed among themselves

and with their therapist. In terms of our model of cognitive mediators, group therapy would be best for working on expanding possible solutions to problems and increasing the repertoire of positive and adaptive reactions that are available to the young person. The processes involved in dynamic group therapy for adolescents have been well described by Evans (1998).

Dynamic psychotherapy is derived from the principles that underpin psychoanalysis, in particular, the presence of unconscious drives that influence behavior and decision making. It aims to allow the individual to change these influences so as to reach more realistic and effective solutions, uncontaminated by fixations on old maladaptive ones (neuroses). It therefore involves the rational examination of conscious and unconscious conflicts.

The purpose of dynamic psychotherapy for young people is to help them increase their capacity for mature decision making. Within the therapeutic relationship, problems are identified and solutions for them are sought. In recent developments of this form of psychotherapy, the idea of narratives that underlie the constancy of the understanding of self has been developed as a major focus. It seems that meaningful narratives about one's personal, remembered experiences protect esteem and shield against the development of negative relationships with others (Fonagy et al., 1994).

There are no controlled trials of the treatment of depression or conduct disorder in young people by dynamic psychotherapy. There have been many positive case reports, and these are readily available in the literature. This form of therapy is intensive and usually long term, although brief interventions have been developed based on the same principles. The intensity of the treatment, its length, and its cost have been seen as a disadvantage.

Leaving aside specific problem-solving approaches, we should note that there are other important forms of treatment apart from psychological and social ones. In particular, there may be an

important role for medication in individual cases. The selective serotonin reuptake inhibitors (SSRIs) such as fluoxetine have proven effective in adults with depressive disorders, and although there is some controversy about their effectiveness and safety in young people, there are strong clinical impressions that these medications may be effective in reducing depressive symptoms in adolescents. They carry side effects and complications that both clinician and patient need to understand.

Lithium, carbemazepine, and sodium valporate may also have useful roles to play, particularly in the treatment of bipolar affective disorder in young people. Some clinicians have reported that these drugs may also be useful in moderating behavioral inconstancy in young people. No controlled studies exist to determine whether these clinical observations are correct, and these medications also have adverse effects.

However, it may be that medication is necessary in order for the young person to fully utilize the psychological and psychosocial interventions in an effective way. Depression slows down cognition and limits concentration. Psychosis scrambles thoughts. In neither case will an affected young person be able to effectively utilize problem-solving approaches. An effective clinician will find the optimal balance between these interventions.

Conclusion

Our findings suggest that problem solving is impaired in young people who progress from depression to suicide and from conduct disorders to serious risk-taking behavior. Our findings also suggest that young people who develop depression and conduct disorders already have some impairment in their capacity to solve problems. Currently these deficits appear to be overlooked in the development of

prevention programs for suicide and serious risk-taking behaviors among young people.

It is possible to see problem-solving interventions as being useful at two levels. First, interventions can be developed prior to the onset of emotional or behavioral disorders as a means of preventing these disorders from developing. Second, interventions could be made after the onset of depression or conduct disorder as a means of preventing the serious outcomes of suicidal behavior and risk-taking behavior. Of course, interventions with a problem-solving focus would not be the be-all and end-all of interventions that could, or should, be conducted, but they may be a powerful addition to the range of intervention programs for the mental health of young people.

The Epidemiological Catchment Area study has indicated quite clearly that depressive disorders first become manifest in adolescence. Therefore, problem-solving interventions for the prevention of depression have to be aimed at late primary and early high school students. Conduct disorders seem to have an even earlier first manifestation, possibly around the middle of the primary school years (Rey, 1992). Prevention programs for conduct disorders therefore have to be aimed at primary school students.

Apart from the timing of problem-solving interventions, thought has to be given to the components of such programs. Reference to Table 5 shows the problem-solving deficits present in conduct disordered, depressed, suicidal, and risk-taking young people as demonstrated in our studies. Programs have to be developed that address each of these points.

Components of the programs should, therefore, enable the individuals who participate to generate a wider range of potential solutions to problems, to generate solutions that are more relevant to the problem, to generate less aggressive responses, to select solutions after consideration of their consequences, and to create solutions that actually work. The programs should impart confidence that the

solutions generated can work. Self-governed solutions should be valued over those that are developed for the sake of making one look good in the eyes of peers. The programs should also encourage positive attitudes that value life.

This raises a lot of questions about how to approach this. In this book we have tried to generate these questions rather than to provide the answers. Now we require those with expertise in the development of programs that focus on problem-solving skills to come forward and develop interventions that take the Suicide and Risk-Taking model into account. Then the long process of testing them in the field will commence. Despite this enormous task, the work will be addressing one of the major concerns of our global community – the emotional life of our young people.

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