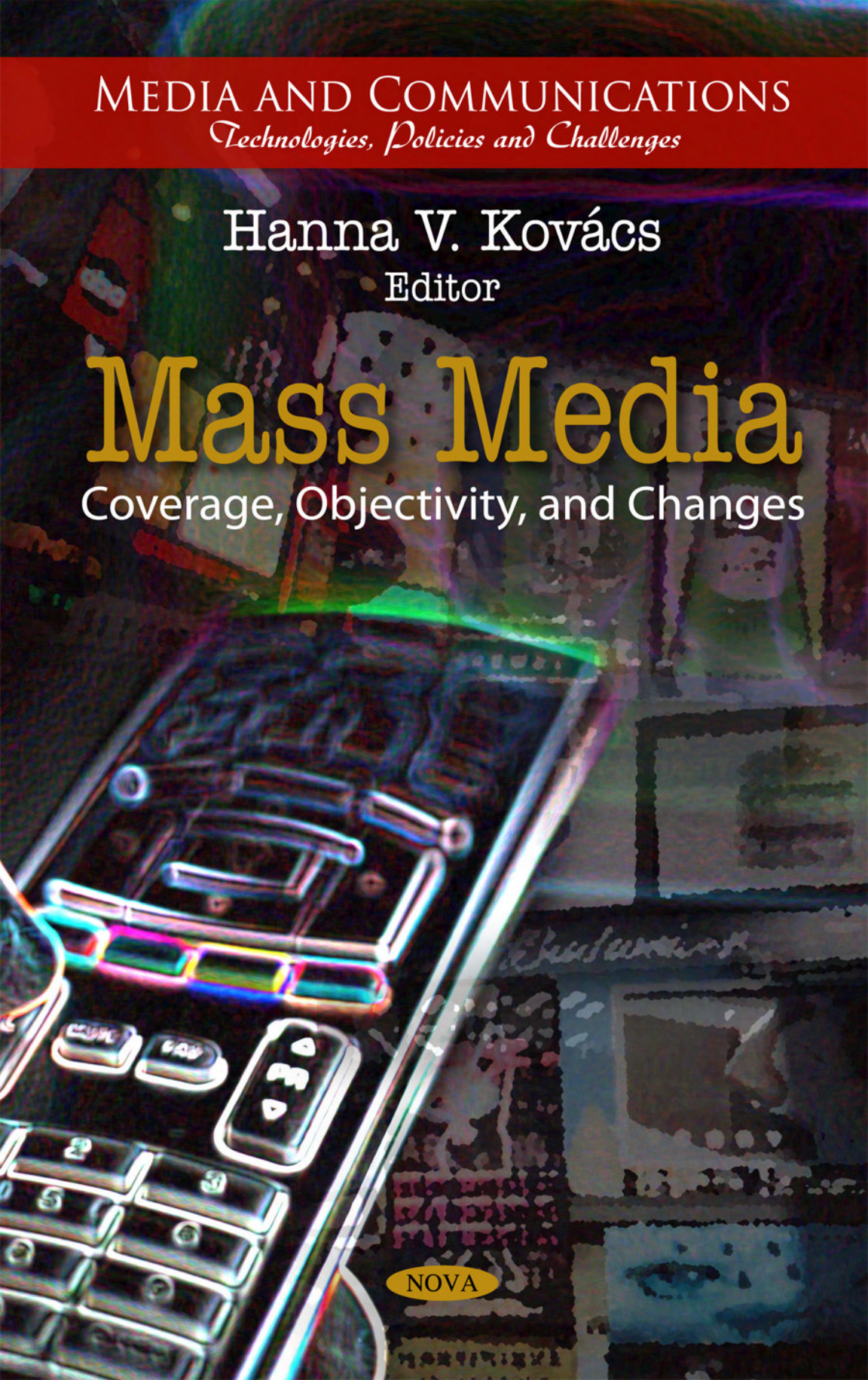
MEDIA AND COMMUNICATIONS
*Technologies, Policies and Challenges*

Hanna V. Kovács
Editor

# Mass Media

## Coverage, Objectivity, and Changes



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# MASS MEDIA: COVERAGE, OBJECTIVITY, AND CHANGES

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**MEDIA AND COMMUNICATIONS - TECHNOLOGIES, POLICIES AND CHALLENGES**

# MASS MEDIA: COVERAGE, OBJECTIVITY, AND CHANGES

**HANNA V. KOVÁCS**
**EDITOR**


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# PREFACE

Over the past 20 years, significant evidence has accumulated supporting the use of mass media campaigns in smoking cessation efforts. Studies have shown that smoke cessation campaigns can change beliefs and attitudes about quitting, increase motivation to quit and stimulate quit attempts. Also discussed in this book is the role of mass media in shaping and presenting certain forms of national identity; the prosocial messages in animated cartoons; the political use of fear and news reporting in Italy; media depiction of risky driving and adolescent driving behaviors; and the Axelrod Model of social phenomena and mass media.

The meaning and consequence of national identity have long been the focus of theoretical debate among philosophers, historians, and social scientists. As a general concept, national identity has two different and specific manifestations: patriotism and nationalism. The former connotes pride and love for a country and the latter refers to a chauvinistic arrogance and desire for dominance in international relations. Much preceding research concentrates on the consequences of these forms of national identity, but ignores the construction, particularly the role of mass media in shaping and presenting certain forms of national identity. As mass media are important for the making and maintaining of boundaries, and therefore the construction and reproduction of national identity, analyzing media's discourse may have great potential to generate new insights into our understanding of national identity.

Chapter 1 examines the role of a national newspaper in the presentation of American national identity by analyzing the New York Times' editorials after September 11$^{th}$, 2001. The critical discourse analysis of the New York Times' editorials over the three months after 9/11 reveals that the New York Times' presentation of American national identity was a dynamic process. Both

patriotism and nationalism were presented in the New York Times' editorials, but with different priorities in different periods.

Interestingly, two categories were almost equally emphasized in the first month after the terrorist attack. This shows that the New York Times' presentation of national identity in editorials was quite balanced. Both war and criticism were given considerable attention. During the second month, the difference between patriotism and nationalism became notable, with the themes of nationalism accounting for approximately twice as much as those of patriotic themes. There was a shift in the presentation of national identity from nationalism to patriotism over the last month of this study. Criticism of the government became the most prominent theme in the presentation of American national identity. Overall, a shift from nationalism to patriotism can be identified over the three-month time frame. War, fear, reconstruction, and criticism were the four major themes of the presentation of American national identity.

Despite a large amount of attention having been given to the subject of violence and aggression in the media, surprisingly little research has been done to examine the positive, or prosocial, content. Relying upon a content analysis of one specific type of medium to which young people are exposed beginning at an early age, on a regular basis, and for many years (i.e., animated cartoons), the present study examines this oft-overlooked subject.

Chapter 2 examines the following issues: (1) How prevalent are prosocial messages in animated cartoons? (2) Has this prevalence changed over time? (3) What types of prosocial actions are shown most often? (4) When prosocial content is provided, what are the implied reasons underlying the positive things that characters do for one another? (5) What "types" of characters tend to be more/less prosocial than others?

Results indicate that most cartoons contain prosocial content and that the prevalence of positive messages has risen dramatically over the course of the past several decades. Providing physical assistance to a character in need and showing genuine concern for the physical and/or emotional well-being of another character were the most-commonly-shown types of prosocial behaviors. Inherent goodness or kindheartedness, friendship, and concern about another character's well-being were among the most common reasons given for engaging in prosocial behaviors. Many variables were found to differentiate more- and less-prosocial characters from one another, including gender, race, and physical attractiveness, among others.

As explained in Chapter 3, over the past 20 years, significant evidence has accumulated supporting the use of mass media campaigns in smoking

cessation efforts. Studies across Australia [1-4], Massachusetts [5-7], California [8, 9], Wisconsin [10, 11], Oregon [12], Britain [13], Texas [14, 15], and others have shown that smoking cessation campaigns can change beliefs and attitudes about quitting, increase motivation to quit, and stimulate quit attempts. For example, results of the original Community Intervention Trial for Smoking Cessation study (COMMIT), conducted from 1988-1993 and spanning across nine states and Ontario, Canada, showed that smokers were 10% more likely to quit for every 5000 units of exposure to state anti-tobacco television advertisements [2]. In California, 34% of former smokers said that the state-sponsored smoking cessation media campaign was influential in their decision to quit [9]. Estimates indicated that the campaign accounted for 21% of the 10-13% decline in cigarette consumption [16] and a reduction of cigarette sales by 232 million packs between 1990 and 1992 [17]. Despite such promising results, it is unclear how mass media campaigns work to influence cessation-related behavior, and how best to construct and use campaigns to achieve this goal. A review of the literature confirms this: there is no easy solution, no best solution and no one solution. To reach and engage such a broad and diverse population as smokers, a multifaceted and dynamic approach may be the only answer.

Chapter 4 explores the relationship between fear of crime and political dynamics in Italy. Of particular relevance is the fact that Italian Prime Minister Silvio Berlusconi is the richest person in Italy, controlling a large share of the mass media industry. Berlusconi uses his media influence to cultivate the public's fear of crime, for his own political gain. The chapter explores the social science literature concerning public issues, media coverage, and public fear. The Italian media landscape is described, including Berlusconi's direct or indirect control of various media. The main thrust of the chapter explores the aspects of Berlusconi's manipulation of crime coverage in media, which manipulates the public's fear of crime, which in turn may be associated with voting behaviours. Concluding reflections explore the complexities of the model of media manipulation presented and the importance of the Italian case in a global climate of continuing capital accumulation in media industries.

Traffic crashes are an important cause of injury and death among young people. It has been argued that there may be an association between media depictions of risky driving and adolescents' driving behaviour. However, the actual depiction of driving on television has remained largely unexamined. In Chapter 5, content analysis was used to examine the prevalence of risky driving in a sample of 26 popular action movies. The data showed that risky driving is very common, but that its consequences are rarely portrayed. Risky

drivers appeared to be mostly young males, were lead characters and often the hero. Very often no seat belt wearing was shown. Since media effects theories suggest that these portrayals may influence viewers' norms and risk perceptions, these results have important implications for prevention.

The Axelrod model has been proven to be a fruitful model to study different social phenomena related to the dissemination of cultures. In recent years, it has been widely studied and several settings have been implemented to understand different social situations. Particularly, attention has been dedicated to the case where an external field is present, in order to characterize the competition between agent-agent interactions and the agents' interaction with the external field influencing all of them. In Chapter 6, the authors review some fundamental aspects of the Axelrod model. To situate the reader in the context of this review, the authors first discuss several modifications of the original model. Afterwards, a new way to include an external vector field is studied. The vector field acts over the whole system and remains fixed on time. It has a non null overlap with each agent in the society. The authors explore the influence of this external agent under different model formulations and analyze the system's behavior when dyadic interaction between agents is changed to *social influence*, as has been recently suggested. Furthermore, we discuss in depth how the results obtained depend on different parameters such as the initial social diversity, the size of the network, the strength of the external agent (here associated to Mass Media), different levels of noise, etc. The authors' conclusions both summarize what they discuss and points to future challenges.

As discussed in Chapter 7, mass media have the capacity of influencing behavior, including suicidal behavior in vulnerable individuals. An imitation effect has been demonstrated although some questions and some controversies persist concerning what makes certain people more vulnerable, what the exact mechanisms of the effect are, and what constitute the best protective steps. Moreover, much of the evidence which has been gathered lacks clear specifications in regard with psychiatric diagnoses, making it difficult to ascertain what role is played by psychosis in the process. In particular, the Internet has a huge potential for communication and recent reports suggest it may both benefit and hamper preventive strategies against suicide. Additionally, telepsychiatry, a model of care with clear connections with Internet is now being used with fairly good evidence of success. Suicidal behaviors may be approached by this modality but a number of difficulties have yet to be overcome. Controversial findings, frequent and rapid changes in

the mass media and a lack of research studies on these issues preclude definitive conclusions.

Unfortunately, data are particularly scarce on the potential effects of mass media on suicidal behavior in patients with psychotic disorders. This is especially true for the Internet. To our knowledge, no research study has specifically addressed the effects of this medium on the suicidal behavior of psychotic patients. Available data and reflections by the authors are presented in this chapter which is also aimed at helping mental health professionals to orientate their patients on how to take advantage of mass media while not being damaged from them.

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*Chapter 1*

# PATRIOTISM OR NATIONALISM? THE *NEW YORK TIMES*' DISCOURSE OF AMERICAN NATIONAL IDENTITY AFTER 9/11

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## Abstract

The meaning and consequence of national identity have long been the focus of theoretical debate among philosophers, historians, and social scientists. As a general concept, national identity has two different and specific manifestations: patriotism and nationalism. The former connotes pride and love for a country and the latter refers to a chauvinistic arrogance and desire for dominance in international relations. Much preceding research concentrates on the consequences of these forms of national identity, but ignores the construction, particularly the role of mass media in shaping and presenting certain forms of national identity. As mass media are important for the making and maintaining of

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boundaries, and therefore the construction and reproduction of national identity, analyzing media's discourse may have great potential to generate new insights into our understanding of national identity.

This chapter examines the role of a national newspaper in the presentation of American national identity by analyzing the New York Times' editorials after September 11th, 2001. The critical discourse analysis of the New York Times' editorials over the three months after 9/11 reveals that the New York Times' presentation of American national identity was a dynamic process. Both patriotism and nationalism were presented in the New York Times' editorials, but with different priorities in different periods.

Interestingly, two categories were almost equally emphasized in the first month after the terrorist attack. This shows that the New York Times' presentation of national identity in editorials was quite balanced. Both war and criticism were given considerable attention. During the second month, the difference between patriotism and nationalism became notable, with the themes of nationalism accounting for approximately twice as much as those of patriotic themes. There was a shift in the presentation of national identity from nationalism to patriotism over the last month of this study. Criticism of the government became the most prominent theme in the presentation of American national identity. Overall, a shift from nationalism to patriotism can be identified over the three-month time frame. War, fear, reconstruction, and criticism were the four major themes of the presentation of American national identity.

# Introduction

The meaning and consequence of national identity have long been the focus of theoretical debate among philosophers, historians, and social scientists. Ricento (2003) argued that national identity is a mental, imaginary, and discursive construction. It is shaped by and helps to shape its socio-historical context, becoming real to the extent that people believe in it and make emotional investments in it. Thus, the real place of any nation does not exist outside of the social discourses of its presentation.

As a general concept, national identity has two different and specific manifestations: patriotism and nationalism. The former connotes pride and love for a country and the latter refers to a chauvinistic arrogance and desire for dominance in international relations (Li & Brewer, 2004). Much preceding research concentrates on the consequences of these forms of national identity (Blank & Schmidt, 2003; Karasawa, 2002; Kosterman & Feshbach, 1989; Li & Brewer, 2004; Mummendey et al., 2001; Schatz et al., 1999), but ignores the construction, particularly the role of mass media in shaping and presenting certain forms of national identity. As mass media, especially the national mass media, is important for the making and maintaining of boundaries, and therefore the

construction and reproduction of national identity (Gellner, 1983; Schlesinger, 1991), analyzing media's discourse may have great potential to generate new insights into our understanding of national identity.

As two forms of national identity, patriotism and nationalism both increase in response to an outside threat. The tragic 9/11 terrorist attacks spawned immediate, visibly evident increases in expressions of national identification and unity throughout the United States (Li & Brewer, 2004). The high degree of uncertainty, broadly shared understandings and intense collective presentations in the period following 9/11 created a unique and meaningful context to explore the media's presentation of American national identity. This chapter, thus, attempts to identify the *New York Times*' discourse of American national identity after 9/11 by analyzing its editorials over this period. More specifically, the question raised here is how the *New York Times* presented American identity.

# Literature Review

## National Identity

The concept of nation can be defined as an "imagined political community" by Anderson (1983), addressing an inside-out position toward the constitution of national identity:

> It is an imagined political community – and imagined as both inherently limited and sovereign. It is *imagined* because the members of even the smallest nation will never know most of their fellow-members, meet them, or even hear of them, yet in the minds of each live the images of their communion it is imagined as a *community* because, regardless of the actual inequality and exploitation that may prevail in each, the nation is always conceived as a deep, horizontal comradeship. (Anderson, 1983, p. 15-16)

Adding the perspective of collective identity within the finite boundaries of this imagined community, the construction of national identity is rather static and just imagined once (Brookes, 1999). Further, Schlesinger (1991) describes national identity as a particular form of collective identity which is continually constructed and reconstructed through processes of inclusion and exclusion which distinguish us from them.

Aside from the theoretical category of national identification lie its definitions and representative content. On a general level, the term national identity indicates a "constructed and public national self-image based on membership in a political community as well as history, myths, symbols, language, and cultural norms

commonly held by members of a nation" (Hutcheson et al., 2004, p. 28). It is also described as a form of group identification at the national level (Li & Brewer, 2004; Memmendey et al., 2001) or categorized as patriotism (Bar-Tal, 1997; Kosterman & Feshbach, 1989). According to Blank and Schmidt (2003), definitions of national identity are rather diffused, complicated and even not clear to this day. Drawing from their studies, two aspects are presented as the major concepts in this chapter: (1) an overall positive emotion toward the nation that can principally vary within the positive and negative poles, and (2) a subjective conviction (knowledge) as to which nation one formally belongs to, and to which one wants to formally belong.

## Patriotism and Nationalism

Specifically, national identity may have two manifestations. On the positive side, national identity creates bonds of unity among all members, aligns individual interests with national welfare, and provides the motivation for being a good group member at the individual level (Li & Brewer, 2004). On the negative side, high levels of national identification have often been associated with authoritarianism, superiority, intolerance, and warmongering (van Evera, 1994).

In social psychology, this distinction between the positive and negative manifestations of national identity is presented by drawing a line between "patriotism" and "nationalism." The former implies positive love for and pride in one's own country and its symbols (Bar-Tal, 1993; Bar-Tal & Staub, 1997; Kosterman & Feshbach, 1989; Pena & Sidanius, 2002) related to secure in-group identification (Druckman, 1994) and independent of out-group derogation (Brewer, 1999). The latter indicates insecure in-group identification and intergroup differentiation, including a sense of national superiority and dominance over other nations and peoples (Feshbach, 1994; de Figueiredo & Elkins, 2000; Kosterman & Feshbach, 1989; Li & Brewer, 2004; Mummendey, Klink, & Brown, 2001; Sidanius et al., 1997).

In a most recent work, Li and Brewer (2004) claim that the major difference between nationalism and patriotism lies in their relationship to intergroup attitudes, given that they share the feature of positive in-group evaluation and pride. Different from nationalism, patriotism never implies a zero-sum relationship between in-group and out-group affect, a rejection of out-groups, or a desire to dominate and oppress out-groups (Brewer, 1979; Brewer & Campbell, 1976; Herring, Jankowski & Brown, 1999; Hinkle & Brown, 1990; Pena & Sidanius, 2002; Struch & Schwartz, 1989). In this sense, patriotism is compatible

with liberalism and tolerance for diversity, whereas nationalism is more likely to be associated with authoritarian values, intolerance, and the degradation of out-groups (Blank & Schmidt, 2003; Li & Brewer, 2004).

Nationalism is also referred to as "blind patriotism" (Adorno et al., 1950) and chauvinism. Patriotism, in comparison, is a "genuine" or "true" patriotism, which is defined as a combination of "love of the country" and "attachment to national values based on critical understanding" (Adorno et al., 1950, p. 107). It is also called by some (Schatz & Staub, 1997; Schatz et al., 1999; Staub, 1997) as a kind of "constructive patriotism" in the sense of critical loyalty.

Which conceptualization of national identity is activated, however, may vary as a function of the perceived intergroup context, the salience of different national symbols, or the behavior of national leaders (Li & Brewer, 2004). As Brookes (1999) argues, while presenting itself as fixed, natural, and eternal, national identity is continually in process, which is not just imagined once, but is continually reinvented. Therefore, national identities should not be seen as fixed or static. Instead, they are continually reconstituted through strategies of exclusion and inclusion in the face of perceived threats from without and within (Schlesinger, 1991).

## National Identity and the Press

In the process of the construction of national identity, newspapers play a key role in the way in which the nation is understood in terms of time and space. According to Anderson (1983), newspapers created "an imagined community among a specific assemblage of fellow-readers" to reveal the diverse conditions settled by social and business needs of capitalism and colonial administration (p. 62). Newspaper reading constitutes the simultaneous consumption of the same newspapers by a group of individuals defined within fixed boundaries (Anderson, 1991).

Apart from the process of simultaneous ritual consumption of newspapers, newspaper content also play a part in the construction of national identity (Brookes, 1999). As Mercer wrote, newspapers 'constitute either a preamble or break in the routine of the day . . . setting a frame, a tissue of confirmations, beliefs and expectations. And they are, indeed, constructed in a ritualized way which is fully aware of this power' (1986: 55). In other words, the content of a newspaper does not only reflect the ritual conditions under which it is read, but reinforces and reproduces ritual consumption of newspaper. Therefore, newspaper content and the ritual process of reading are inextricably interrelated and both

contribute to the discursive production of national identity in significant ways. Correspondingly, national identities are discursively produced, reproduced, transformed and destructed by means of language and other semiotic systems (de Cillia, Reisigl & Wodak, 1999). The idea of a specific national community, according to de Cillia et al. (1999), becomes reality in the realm of convictions and beliefs through reifying, figurative discourses continually launched by media people, and disseminated through the system of mass communication, among others.

Accordingly, this chapter examines the role of a national newspaper in the presentation of American national identity by analyzing the *New York Times*' editorials after September 11th, 2001. Because the construction of national identity is a dynamic process, this chapter pays particular attention to the changes of national identity presented by *New York Times*' editorials in the aftermath of 9/11, and how this happened.

## Method

To evaluate the *New York Times*' presentation of American national identity after 9/11, we examine the editorials of this newspaper over the three months immediately following the attacks. There are at least two reasons for choosing the *New York Times* as a source. First, it is one of the leading and prestigious newspapers in the U.S. (Pool, 1952). It is also highly influential, both reflective of and catering to elite constituencies (Lee et al., 2001). Many other newspapers in the country rely on this paper for news and opinions (Noakes & Wilkins, 2002). Because of this, the *New York Times* can be a good representative of U.S. national media in the presentation of American identity. Secondly, the 9/11 world trade center tragedy happened within New York City, where the *New York Times* is located. Therefore, if is safe to say that the *New York Times* had the prior responsibility to act in response to this event. This makes the *New York Times* an ideal information outlet for the analysis of media's construction of national identity after 9/11.

Editorials are chosen as the core corpus of this chapter because they have long been a rich source for discourse analysis (Bolivar, 1994; Hackett & Zhao, 1994; Le, 2002, 2003; Thomas, 1996; Tirkonnen-Condit, 1996). Van Dijk (1996) finds that editorials contain explicit, implicit and implied opinions that lead the reader to agree with the recommendation formulated by the newspaper in its conclusion. In a linguistic analysis of four American editorials on Russian actions in the second Chechen war, Le (2002) suggests that the editorials' criticism

functioned as an element in the construction of American national identity. The *New York Times*' editorials, therefore, are also expected to have played a significant role in the presentation of American national identity after 9/11.

For the 3-month study period (from September 12th to December 12th, 2001), all editorials in the *New York Times*, excluding editorials with byline and letters to the editor, were analyzed. The LexisNexis database was used to obtain the full text of the editorials.

The *New York Times*' editorials were examined within the framework of Critical Discourse Analysis (CDA). As the central goal of CDA is to provide 'an account of intricate relationships between text, talk, social cognition, power, society and culture' (van Dijk, 1993: 253), such an approach can help us understand, for example, the process by which coherent models of national identity are developed, given the complexity and inherent contradictions in such an abstract notion (Ricento, 2003). For this particular study, CDA allows us to continually uncover the implicit arguments and meanings in texts which tend to marginalize non-dominant groups, while justifying the values, beliefs, and ideologies of dominant groups associated with national identity.

As a group, we split up the reading of the *New York Times* editorials in the three months following September 11, 2001. Each of us read every editorial and discarded any article not related to our topic. We analyzed the content and began to find dominant themes related to national identity and the events of September 11. Prevailing subject matter began to materialize within the text as we used an "open coding" format and labeled each editorial based on these themes that emerged. After thoroughly analyzing each editorial, we met in a group to discuss our findings. We discussed the central codes and came to a consensus for the overall themes.

## Patriotism or Nationalism?

Over the three months after the 9/11, 162 editorials were identified relevant to American national identity and account for 57% of all the editorials (284) in this period. Eight themes of editorials were found central to the presentation of national identity: (1) war against terrorism, (2) fear of terrorist, (3) U.S. priority over other countries, (4) U.S. dominance in international relations, (5) domestic support of the President's war policy, (6) criticism of the government, (7) reconstruction of the nation, and (8) grief of the tragedy.

According to the previous literature, the first five themes can be put into the category of nationalism, and the remaining can be categorized as patriotism.

Apparently, war on terrorism represents an extreme solution to the terrorist attack, which reflects the notion of militarism and the feeling of national superiority. It is, therefore, a typical nationalistic theme. The most common concepts related to this theme were war, terrorism, military, victory, power, forces, operations, warrior, casualties, conflict, fatalities, troops, and targets, among others. Usually, these concepts were introduced in a bipolar manner, dividing the discourse with a sense of good and evil; relating the U.S. as the good and the "others" as evil.

As the major purpose of the portrayal of fear is to justify the war, the theme of fear also fits into nationalism. A nation afraid of future attacks would easily support the war to keep a sense of safety. In this way, people may avoid contact with, and intensify the rejection of the groups that they consider dangerous. Therefore, whenever fear was exaggerated or enlarged in the editorials, the purpose behind this anxiety was clearly a nationalistic one. Fear was presented in many different ways using such terms as insecurity, crisis, threat, terrorism, biological weapons, fright, lethal, attack, the worst, or danger.

Since war is a military solution to the terrorist problem, and is not necessarily the best solution available to the U.S. government, domestic support of President Bush's war policy is an uncritical and blind acceptance of the national authority. Undoubtedly, priority over other nations and dominance in international relations are the best manifestations of national superiority and out-group derogation, and therefore are both nationalistic themes. The U.S. demanded world support against terrorism while ignoring or minimizing any other countries' interests. The discourse of the editorials showed the idea that the countries were identified as either U.S. allies or U.S. enemies.

Based on existing literature, criticism of the government represents the critical loyalty of the nation and therefore is a "constructive patriotism." The theme of reconstruction reflects a true love of the country that tries to make the nation recover from the attacks as soon as possible. This theme includes all references to physical, psychological, economic and social reconstruction. It is also another type of "constructive patriotism." Similarly, the grief theme is resulted from, and a reflection of, the love of the country and fits into the category of patriotism as well. It includes particularly sociological and psychological aspects of the U.S. after 9/11. References to feeling and emotional states are the most common examples of reconstruction within the text.

Overall, nationalistic and patriotic themes were equally emphasized in the New York Time's editorials in the three months right after the 9/11. The categories of nationalism and patriotism had 82 and 80 articles published respectively. When we looked at the number of editorials in each month, however, we found differences (see table 1). In the first month after the attacks (September

12-October 12), the number of nationalistic themes (46.2%) is very similar to the themes of patriotism (53.8%). Their difference became notable in the second month (October 13-November 12), with the themes of nationalism accounting for 65.4% of the editorials in this month which is nearly twice as much as those of patriotic themes (34.6%). The numbers, however, reversed in the third month after 9/11 (November 13-December 12), with the themes in patriotism (60%) 20% higher than that of nationalism. It indicates that nationalism was more dominant than patriotism in the presentation of national identity in the *New York Times*' editorials over the first two months immediately following the 9/11, whereas patriotism was more emphasized by the *Times*' editorials in the third month. The rest of the paper will describe the shifting presentation of national identity in a time frame as short as three months, and make some interpretations of the change.

**Table 1. Themes of National Identity in the *New York Times*' Editorials by Months**

| Themes | The first month | The second month | The third month |
|---|---|---|---|
| *Nationalism* | 46.2% | 65.4% | 40% |
| War | 10 | 5 | 6 |
| Fear | 6 | 20 | 9 |
| Priority | 6 | 2 | 1 |
| Dominance | 3 | 6 | 2 |
| Domestic support | 5 | 1 | 0 |
| *Patriotism* | 53.8% | 34.6% | 60% |
| Criticism | 12 | 10 | 13 |
| Reconstruction | 20 | 7 | 9 |
| Grief | 3 | 1 | 5 |
| Total (n) | 65 | 52 | 45 |

## The First Month: Nationalism vs. Patriotism

In the first month immediately after the terrorist attack of the World Trade Center, the presentation of American national identity was somewhat evenly distributed between nationalism and patriotism.

## War against Terrorism

Among the themes of nationalism, the war against terrorism was the most emphasized theme in the *New York Times*' editorials. The September 12 issue of the *New York Times* carried one large headline on its editorial page, "The War Against America," with two articles underneath: "An Unfathomable Attack" and "The National Defense." In the former essay, the *Times* said:

> Every routine, every habit this city knew was fractured yesterday. If a flight full of commuters can be turned into a missile of war, everything is dangerous. If four planes can be taken over simultaneously by suicidal hijackers, then we can never be quite sure again that any bad intention can be thwarted, no matter how irrational or loathsome. We have nearly all had occasion to wonder how civilians who suddenly found their country at war and themselves under attack managed to frame some memory of life as it once was. Now we know. We look back at sunrise yesterday through pillars of smoke and dust, down streets snowed under with the atomized debris of the skyline, and we understand that everything has changed.

Emphasizing that the terrorist attack changed everything and split the history and the world into "before" and "after", the *Times* wrote, "What we live with now, beyond shock and beyond the courage witnessed on the streets in New York and Washington yesterday, is an urge for reprisal." (12 September 2001) "There is no doubt," said the *Times* four days after 9//11, "that this week's terrorist attacks on New York and Washington were the opening salvos in the first American war of the 21st century" (15 September 2001). However, as the terrorist attacks are an unorthodox threat that conventional armies and weapons cannot defeat, the *Times* urged the country to be prepared for "war without illusions," a "long and unpredictable war." By choosing war as the solution for terrorism, the *Times* editorials made the war a "shared mission" of every American and made national identity tightly associated with it.

As it is impossible for the U.S. to win a battle without any enemy nation, the second task of the *Times*' editorials, after choosing war as a solution, was to identify the enemy. Observing the fact that Washington cannot claim war to all the states who sponsor terrorism, including Iraq, Iran, Syria and Sudan, as well as Afghanistan, it is wise for the Bush administration to set an initial target. "For now, at least," the *Times* said, "the one state where American military power might be effectively used is Afghanistan, where the Taliban-led government is host to Osama bin Laden, the prime suspect in Tuesday's attack." To justify the war against Afghanistan, several editorials actively presented the evidence on terror and made the case against Osama bin Laden and his terrorist network Al

Qaeda (e.g., 3 October 2001). Such evidence played a significant role in helping to build stronger domestic and international support for the campaign against terrorism. Meanwhile, the definition of the enemy may help Americans relocate their attention to the specific targets and clarify their identity of terrorist fighters.

As America's counterattack against terror began, *Times*' editorials focused their attention on the process of the war. On October 8, when the United States and Britain started their air strikes against Al Qaeda training camps and Taliban military targets in Afghanistan, one editorial wrote, "It was a moment we have expected ever since Sept. 11. The American people, despite their grief and anger, have been patient as they waited for action. Now that it has begun, they will support whatever efforts it takes to carry out this mission properly." It seems that the Americans had been waiting too long for whatever visible reactions was made by the government, specifically the war. Thus, *Times*' editorials took advantage of people's eagerness to the war to provoke their uncritical support of the military action. By doing so, the Bush administration built a resolute and courageous image and tightly united the public around it.

## U.S. Priority over Other Countries

U.S. priority over other nations is another significant theme in the first month. Since the end of World War II, the U.S. has long been a superpower in the world. This was especially the case after the end of the Cold War and the collapse of Soviet Union, its only counterpart during the Cold War. Even in the peaceful time, a sense of priority over other countries is not hard to find, which can be embodied in its criticism of other countries' political systems, human right conditions, media policies, etc. Therefore, it is not surprising that the 9/11 attacks on the soil of the U.S. triggered its more intense superiority over the rest of the world. On the next day of the attack, the *Times* said:

> Americans have long known that these resentments existed. The nation must now recognize and address the fact that hatred has turned into a malignant threat that can destabilize the underpinnings of the world economy and civil society. The World Trade Center was not just a symbol of American prosperity. It was an economic nerve center. (12 September 2001)

The very fact that this editorial acknowledged the feelings of resentment harbored by other countries (with regard to the power and position of the U.S.), told us that the country was already feeling superior to the others. The very next sentence talked of the nation paying the price for being superior to other nations in the world. Although the words were written to explain the reasons for the attacks,

the underlying sense of superiority came through plainly and this in turn illuminated the sense of priority over the other nations.

There were also connotations about the World Trade Center in New York. The meaning of the text was that the WTC towers were much more important than just a set of magnificent edifices. They were, in fact, the most important buildings in the U.S. and probably the world over. The very last sentence of the paragraph appears incomplete because it could easily have read, "It was an economic nerve center, of the world." It may be the truth that the destruction of the World Trade Center in New York could destabilize the world economy and civil society, but we seldom hear these conclusions made by the *Times* when similar incidents happen in other countries.

## Reconstruction

When it comes to the themes of patriotism, reconstruction carried the most weight in the *Times*' editorials. This reflects the *Times*' equal emphases on external and internal solutions of the terrorist attacks. More specifically, the theme of reconstruction consisted of three aspects: infrastructure, economic, and political reconstruction.

"Virtually everyone in New York City, and indeed most of the country," September 24 issue of the *Times* said, "understands the importance and urgency of rebuilding downtown Manhattan. In the aftermath of the terrorist attack, it is vital to reaffirm the city's status as a premier financial capital and restore hope to a battered neighborhood. " Undoubtedly, the reconstruction of lower Manhattan is the most direct means to resolve the chaos caused by the attack. Actually, the *Times* used a very optimistic tone to encourage the people to rebuild the city. As the same editorial wrote, "there is every reason to believe that if our elected leaders and the best minds in the financial and architectural communities are willing to seize the moment, it can be made even more vibrant than it was before Sept. 11."

Economic reconstruction is the most important task facing the city and the nation. The *Times* noted, "People are also understandably concerned that last week's terror attacks may have pushed the nation into the recession it has barely avoided in recent months. Several industries, notably airlines, tourism and insurance, have come under special pressure this week. Congress appears to be moving quickly toward some sort of aid to the airlines, as well as a wider economic stimulus package that would be a combination of spending and tax cuts" (18 September 2001). For New York City, it needed people to spend money

to drive its economy. When asked what the nation could do to help the city, Mayor Rudolph Giuliani replied "Come to New York, go to a play . . . spend some money" (21 September 2001).

The election of the mayor of the New York City was also crucial to the reconstruction of the city. During the campaign, the *Times* said, "At televised public appearances, the contenders attempted to explain how they would govern a city that is so different from the one that existed before the original Election Day, Sept. 11. Their comments demonstrated how important it is now to take a second look at the men who want to lead New York." Again, the *Times* attempted to convey to its readers a value that the U.S. smooth recovery to the political order "is the best way to honor the fallen and triumph over terrorism" (24 September 2001).

## Criticism of the Government

Another heavily emphasized patriotic theme is the criticism of the government. In the first month, this criticism mainly focused on two aspects: unbalance between security and liberty, and flawed plans of economic reconstruction.

The *Times* reasonably criticized the governments over control of information. "Since the terror attacks on Sept. 11," it said, "the administration has made abundantly clear that it would like to tightly control the flow of information about the war on terrorism. This attitude could ultimately undermine public support for Washington's antiterror campaign by depriving Americans of information they need to assess the administration's actions and the state of the nation's security." The administration "must not arbitrarily shut down the flow of legitimate data necessary to preserve accountability and the free flow of information cherished by Americans, even in times of war" (11 October 2001). Although it is normal for the government to safeguard some information (e.g., specific military plans and certain kinds of intelligence data) in times of war, the *Times* firmly defended that much information, including matters the government might like to bottle up to avoid debate, belongs in the public domain. The actions taken by the U.S. were legitimate according to most citizens in the country, namely the war in Afghanistan. The actions taken at the home front in the name of the war against terrorism, on the other hand, made the citizens concerned about the freedom that could be curbed under the circumstances. The American people indeed supported the government and war, but they had to acquire enough information to oversee the government's doing and to ensure that the government made right decisions.

*Times*' editorials also criticized the President's economic performance. The *Times* said, "President Bush and his national security team have done a good job of assuring the American people that they understand the political and military challenges of the fight against terrorism. The administration has seemed less sure-footed when it comes to handling the threat to the nation's economy" (2 October 2001). The *Times* first stated that the Bush administration had yet to show full command of the issues they face. When President Bush finally laid out a stimulus package, the *Times* made a comment that this package "relies in large part on ineffective, irresponsible and regressive tax cuts," and suggested that Congress reject permanent tax cuts out of hand, and consider rolling back -- not speeding up -- the regressive parts of the president's 10-year tax plan" (6 October 2001).

## The Second Month: The Dominance of Nationalism

In the second month after 9/11, the percentage of nationalistic themes increased from 46.2% to 65.4%, demonstrating a dominance of nationalism over patriotism. The specific themes, however, were attached with different importance in this month.

### Fear of Terrorist

The most evident change is that "fear" became the preponderant themes of nationalism. In fact, fear of terrorism gained significant emphasis in the first month after 9/11. Since the major purpose of this theme is to justify the war on terror, the *Times* could not propose and support the war without the description or exaggeration of fear. On the next day of the attack, editorials began to portray a frightened and foreboding world in which the country was faced with unimaginable terror and attacks. "As horrible as it is to imagine, the United States must also consider a future in which the assaults carried out yesterday may be overshadowed by even more lethal nuclear, biological or chemical attacks by terrorists. We have long known that these dangers could be part of our future. It is now clear they may be nearer than most people thought" (12 September 2001).

The dramatic increases of fear within the second month mainly resulted from the deaths in October caused by anthrax mailed to government and media figures. As the *Times* mentioned earlier, the germs that cause anthrax and smallpox are hardy and highly lethal, making them good weapons for inflicting mass casualties. "The consequences of such an attack could be so awful -- deaths conceivably

reaching into the tens or hundreds of thousands -- that the government obviously has an obligation to prepare for the worst" (7 October 2001). "The discovery of an anthrax case in New York City," said the *Times*, "has heightened concern in a nation that was already jittery and waiting for the next terrorist act to occur" (13 October 2001). *Times*' editorials prepared its readers for a frightening future, transformed by undreamed of terror and unthinkable fears:

> Terrorists have taken aim at the vitality of our famously restless nation. First they commandeered commercial aviation to serve as an instrument of terror. Now someone is attempting to do the same with the nation's mail system. These crucial economic lifelines are as much targets as weapons. Paralyzing America's travel and communication networks would amount to a terrorist triumph. (23 October 2001)

## U.S. Dominance in International Relations

U.S. dominance in international relations was also manifest in the second month. This theme is closely related to U.S. priority over other nations. As the U.S. believes it is superior to the rest of the world, it will certainly play a dominant role in international affairs forcing other countries to follow the U.S. In this case, it means that the other countries should support the U.S. war on terrorism and should provide assistance if necessary. In an editorial on the 2001 Shanghai Summit, the *Times* said:

> President Bush's diplomatic skills will get a workout over the next few days in Shanghai. Instead of talking economics, the usual subject at this annual autumn gathering of 21 Asian and Pacific Rim nations, Mr. Bush will be trying to strengthen the international coalition against terrorism that he has been assembling since Sept. 11. He should use his meetings with other leaders, including Presidents Jiang Zemin of China and Vladimir Putin of Russia, to clarify what help they are prepared to offer and what they expect in return.

Actually, both China and Russia showed strong support to the American campaign against terrorism and offered certain assistances. In return, China expected America and other countries to accept its mischaracterizations of the Falun Gong spiritual movement and separatists in Tibet and Xinjiang as terrorists. Russia also tried to get Washington to mute criticism of Russia's handlings with Chechnya. For these requests, however, the *Times* said, "Mr. Bush should firmly decline." It seems that it is natural for other countries to support the U.S. but not vise versa. It is U.S. who dominates international affairs. The requests made by

U.S. to other countries are just and reasonable, while other nations' requests are irrational and greedy.

Eventually, the de facto U.S. dominance in international relations enabled the establishment of coalition. One essay about the maintenance of coalition said, "Germany has agreed to contribute nearly 4,000 soldiers, the first German military units to operate outside Europe since World War II. Italy is offering 1,000 ground troops and an aircraft carrier. France has 2,000 commandos in the region whom it is willing to make available. Poland and the Czech Republic are ready to send military units, and Turkish special forces are already on the way. These European contingents will join the American, British, Canadian and Australian forces already operating in or near Afghanistan. This Saturday at the United Nations, President Bush is planning to exhort more countries to contribute directly to the military effort" (8 November 2001). It seems that the whole world was actively supporting the U.S. war on terror and U.S., undoubtedly, was the leader of this global antiterror campaign. U.S. leadership in world affairs was again reinforced and escalated. Meanwhile, the fact of world wide support of Bush administration confirmed the rightness of Mr. Bush's war policy and encouraged more domestic support from the U.S. public.

Other nationalistic themes, such as war and domestic support of the Bush administration, dropped considerably in the second month. This might be due to the impasse of war and public unease, which appeared internally and externally. Correspondingly, criticism of the government still maintained its notable status as a theme of patriotism. Some editorials began to criticize the inefficiency of defense (When Terrorists Log On, 21 October 2001) and to reconsider the prospect of the war (Vietnam Ghost, 11 November 2001).

## The Third Month: Shift from Nationalism to Patriotism

In the final period of this study, the presence of patriotism exceeded that of nationalism in the *Times*' editorials. Criticism of the government became the most prominent theme in the presentation of American identity. As for nationalistic themes, war remained at the same level as the second month, and fear fell to the level of the first month. The themes of priority and international dominance received little attention, and no themes of domestic support for the President were found.

## Criticism of the Government

The negative impact of the war on civil right was attacked more intensively in this month. In a November 16 editorial, the *Times* said, "President Bush's plan to use secret military tribunals to try terrorists is a dangerous idea, made even worse by the fact that it is so superficially attractive. In his effort to defend America from terrorists, Mr. Bush is eroding the very values and principles he seeks to protect, including the rule of law." By ruling that terrorists fall outside the norms of civilian and military justice, Mr. Bush had taken it upon himself to establish a prosecutorial channel that answers only to him. "The decision is an insult to the exquisite balancing of executive, legislative and judicial powers that the framers incorporated into the Constitution. With the flick of a pen, in this case, Mr. Bush has essentially discarded the rulebook of American justice painstakingly assembled over the course of more than two centuries. In the place of fair trials and due process he has substituted a crude and unaccountable system that any dictator would admire."

Another editorial also noted that, "Right now the country wants very much to be supportive of the war on terrorism, and is finding it hard to summon up much outrage over military tribunals, secret detentions or the possible mistreatment of immigrants from the Mideast." After the brutal attacks of Sept. 11, the Bush administration began building a parallel criminal justice system, largely removed from the ordinary oversight of Congress and the courts. In this shadow system, people could be rounded up by the government and held at undisclosed locations for indefinite periods. "It is a system that allows the government to conduct warrantless wiretaps of conversations between prisoners and their lawyers, a system in which defendants can be tried and condemned to death by secret military tribunals run according to procedural rules that bear scant resemblance to normal military justice" (2 December 2001). It is never easy to criticize a president in wartime, especially during this war, which began with the killing of thousands of civilians here at home. Therefore, the *Times* did a good job in pointing out the extreme nature of these new measures and arbitrary ways adopted by President Bush.

Besides the invasion of civil rights, the *Times*' editorials also continued to criticize the war. In "The Wrong Time to Fight Iraq" (26 November 2001), the *Times* said:

> The surprisingly swift successes of the American military campaign in Afghanistan have spurred talk about military action to oust Saddam Hussein from power in Iraq. The world would be a safer place with Mr. Hussein's cruel dictatorship removed. At this point, however, there are no good short-term

> options for getting rid of him. The Bush administration would make a serious mistake by moving to wage war in Iraq.

Apparently, Mr. Bush would like to extend his victory to Iraq. The *Times*, however, firmly pointed out the dangerous impact of invasion to Iraq before America's mission in Afghanistan was accomplished. War in Iraq would also undermine the possibility that existed for damping violence between Israelis and Palestinians and restarting efforts toward a lasting peace. Moving militarily against Iraq at that moment would hobble America's power as Mideast peacemakers.

It is noticeable that the *Times*' criticism of the war surpassed its support during the three month after 9/11. By evaluating the strategy and impact of the war in a critical way, the *Times* continuously reminded readers to view the political leader and his policy critically. The U.S. people should love and support the nation, but they should cultivate a critical loyalty of the country.

## Grief of the Tragedy

The theme of grief received more attention in the third month than in previous two months. Reconstruction, however, accounted for only half of the themes in the first month. This may because that psychological effect of the terror is longer than physical influence. As infrastructure, economic and political reconstructions were in the process, people began to heal their hurt hearts.

One kind of grief is the mourning of Lower Manhattan. As mourners poured into Lower Manhattan from all over the world, they were seeking a glimpse of the disaster site and a place to leave tokens of sympathy and support. An editorial mentioned the discussion on a permanent memorial to the World Trade Center victims. Before the New Yorkers began to formulate notions of what kind of memorial they wanted, the *Times* said that there is "a need for something right away -- a large space near the site where people can leave flowers or poems or simply say a prayer" (14 November 2001). The disaster site had become a symbol, which marked an unforgettable history in every American's heart.

Another kind of grief in this period was intertwined with thanks, given the complex atmosphere of Thanksgiving. On November 21, the *Times* called for Americans to go home "for the good of America." Making it home "will break the habit of staying put and help ease us past some of the psychological barriers that September laid in our way." Going home can remind Americans "what an enormous country this is and how resolute, how stalwart, the American landscape can be." The mute resilience of the country will remind Americans how to keep

moving (21 October 2001). On the other hand, Thanksgiving is an occasion to say thanks. The loss this nation suffered on Sept. 11, however, this would make it harder to be thankful. Nevertheless, "in time, grief turns into thanks." The *Times* said, "The awareness of what is missing, of those who are gone, turns from a meditation on their absence into a remembrance of what their presence meant, a remembrance, painful at first that softens into gratitude" (22 November 2001).

As the victim represents and symbolizes society and its individuals, we may see ourselves, and even cast ourselves in the part of the victim (Lule, 2002). In fact, the *Times* explicitly associated victims with other people: "We are also learning to recognize in the tales the obituaries tell, and in the profiles of the victims we see on television, how interchangeable we might have been with those who died. Their lives resembled ours more closely than we can let ourselves imagine." The dividing line between those who made it out and those who did not is inexplicable. Therefore, the *Times* editorials' portrayal of the grief toward victims and the interchangeability between the victims and "us", created a strong bond among the Americans. As the paper said:

> The grace of this Thanksgiving lies in the humility it implies, the acknowledgment of how much we rely on each other. That, too, is a feeling that arose almost immediately from the ashes of Sept. 11, the sense that a sudden bond had been revealed among us all, a blessing no one expected. It seems sometimes as though one of the inexplicable duties of living is to give thanks even in bitter moments, and so to ease their bitterness. That is our job today. The words of thanks may falter, even as they're being spoken. It doesn't matter. Their meaning cannot be missed. (22 November 2001)

## Conclusion

The critical discourse analysis of the *New York Times*' editorials over the three months after 9/11 reveals that the *Times*' presentation of American national identity was a dynamic process. More specifically, the two major manifestations of national identity – patriotism and nationalism – were both presented in the *New York Times*' editorials, but with different priorities in different periods.

Interestingly, two categories were almost equally emphasized in the first month after the terrorist attack. This shows that the *New York Times*' presentation of national identity in editorials was quite balanced. Both war and criticism were given considerable attention.

During the second month, the difference between patriotism and nationalism became notable, with the themes of nationalism accounting for approximately twice as much as those of patriotic themes. The most evident change in this period

is that "fear" became the preponderant theme of national identity. This resulted mainly from the deaths in October caused by anthrax mailed to government and media figures, which created a dramatic fear of unthinkable terror.

There was a shift in the presentation of national identity from nationalism to patriotism over the last month of this study. Patriotism became more dominant than nationalism. Criticism of the government became the most prominent theme in the presentation of American national identity. This might due to the continuous impasse of war and public unease, which appeared internally and externally.

Overall, a shift from nationalism to patriotism can be identified over the three-month time frame. War, fear, reconstruction, and criticism were the four major themes of the presentation of American national identity.

The limitation of this study is the simplification of coding. As one editorial may fit into more than one theme, we only coded them according to the dominant themes found in the editorials. This may lead to simplified findings and conclusions. Future research in this area may apply more of a complex coding criterion to reflect more sophisticated presentations of American national identity.

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*Chapter 2*

# PROSOCIAL CONTENT OF ANIMATED CARTOONS

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## Abstract

Despite a large amount of attention having been given to the subject of violence and aggression in the media, surprisingly little research has been done to examine the positive, or prosocial, content. Relying upon a content analysis of one specific type of medium to which young people are exposed beginning at an early age, on a regular basis, and for many years (i.e., animated cartoons), the present study examines this oft-overlooked subject.

This research examines the following issues: (1) How prevalent are prosocial messages in animated cartoons? (2) Has this prevalence changed over time? (3) What types of prosocial actions are shown most often? (4) When prosocial content is provided, what are the implied reasons underlying the positive things that characters do for one another? (5) What "types" of characters tend to be more/less prosocial than others?

Results indicate that most cartoons contain prosocial content and that the prevalence of positive messages has risen dramatically over the course of the past several decades. Providing physical assistance to a character in need and showing genuine concern for the physical and/or emotional well-being of another character were the most-commonly-shown types of prosocial behaviors. Inherent

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goodness or kindheartedness, friendship, and concern about another character's well-being were among the most common reasons given for engaging in prosocial behaviors. Many variables were found to differentiate more- and less-prosocial characters from one another, including gender, race, and physical attractiveness, among others.

**Key Words**: prosocial content; mass media; animated cartoons; social learning theory; cultivation theory

## Prosocial Content of Animated Cartoons

Over the course of the past several decades, there has been a considerable amount of research and media attention devoted to the subject of violence in the media. Media watchdog/advocacy groups and media monitoring projects such as Action for Children's Television, MediaScope, Parents Television Council, and Children Now have lamented for years what they claim is the large amount of violence on television, in movies, in popular songs, in video games, and in other types of mass media. Indeed, research studies on the prevalence of violence in the media has shown it to be omnipresent. For example, Kunkel *et al.* (1996) documented that 57% of all television programs contain at least one act of violence and that one-third of these programs contain nine or more such acts. Smith and Donnerstein (1998) placed this figure slightly higher, at 61% of all programming containing at least some violence.

Nowhere has the debate about the presence of violence in the media been more contentious than with regard to the violent content of programming targeted at children and other youths. These programs have been shown by numerous researchers to have among the greatest, if not the greatest, rates of violent and aggressive content compared to all other types of programming. For example, Kunkel *et al.* (1996) reported that children's programs are 9% more violent than the average rate of television violence and that this type of programming is more likely than other types to couple violence with humor and to depict violence that leads to no pain or adverse consequences. McCarty (1998) reported that Saturday morning programming targeting children contains four to five times more violent acts per hour than prime-time television does. He went on to note that "the average child sees over 20,000 murders and 80,000 assaults before they [sic] are even a teenager" (p. 1). In years prior, Hickey (1992), Signorielli, Gross, and Morgan (1982), and Gerbner and Gross (1976) also reported that children's programming was more violent than prime-time television and other types of televised programming.

Whenever statistics such as these are publicized, concerns are voiced about the potential–if not probable–impact of being exposed to such large amounts of antisocial media content. Reports of imitative acts of violence abound in the popular press and even sometimes appear in the clinical literature (Boyatizis, 1995; Lande, 1993; Parents Television Council, 2001). Media effects research has demonstrated time and again that exposure to the media has an impact upon people's beliefs, attitudes, and behaviors (Paik & Comstock, 1994). Over the years, considerable evidence has amassed to suggest that exposure to violent acts, aggressive behaviors, and other antisocial content in the media leads to a heightened risk of feeling and/or acting violently, aggressively, and/or antisocially (Paik & Comstock, 1994; Rich *et al.*, 1998; Villani, 2001). Moreover, a dose-effect relationship appears to be in operation here, too, such that the more violence people see in the media, the more likely they are to have negative beliefs and attitudes and/or to behave antisocially (Johnson *et al.*, 2002; Singer *et al.*, 1998).

Conceptually, this makes perfect sense, too, and there is a substantial body of theoretical work in the sociological, psychological, and media studies fields to account for–and to anticipate the presence of–these types of effects. For example, social learning theory (Akers, 1973; Bandura, 1971) posits that people acquire their beliefs, attitudes, and propensity to engage in behaviors, directly based on first-hand experiences they have with others who exhibit particular behaviors *and/or* indirectly, based on what they observe others—including others appearing in the mass media—doing or saying. As Kunkel *et al.* (1996: I-6) put it, "through the observation of mass media models the observer comes to learn which behaviors are 'appropriate'—that is, which behaviors will later be rewarded, and which will be punished." Accordingly, social learning theory would predict that people of all ages (and young people in particular) will learn a great deal about violence and aggression, the circumstances under which it is (un)acceptable to behave violently or aggressively, the rationales that are considered (un)acceptable for engaging in violent or aggressive actions, and the potential consequences of acting antisocially just from being exposed to violent and aggressive media content.

As another example, cultivation theory (Gerbner & Gross, 1976; Signorielli & Morgan,1990) states that media viewers' perceptions of social reality will be shaped by extensive and cumulative exposure to media-provided messages. This theoretical model assumes that people develop beliefs, attitudes, and expectations about the real world based on what they see and hear on television, on video, in film, etc. Subsequently, they use the beliefs, attitudes, and expectations they have developed to make decisions about how they will behave in real-world settings

and situations. Again, Kunkel *et al.* (1996: I-11, I-13) put it well when they stated, "The media, in particular television, communicate facts, norms, and values about our social world. For many people television is the main source of information about critical aspects of their social environment. . . . Whether television shapes or merely maintains beliefs about the world is not as important as its role in a dynamic process that leads to enduring and stable assumptions about the world." In the context of the study of violent or aggressive media content, then, cultivation theory would posit that media messages serve as agents of socialization regarding what to think about violent and aggressive behaviors. This would be particularly true for young viewers who are exposed rather heavily to such media messages through the more-violent-than-average content typifying the types of programming that they tend to view. Cultivation theory would predict that the cumulative effect of exposure to these messages would provide young people with beliefs and attitudes that, ostensibly, reinforce the notions that violence and aggression are ubiquitous, that there are numerous justifications for engaging in such behaviors, that many social contexts are appropriate for behaving violently or aggressively, and so forth.

As a third example, priming effects theory (Berkowitz,1984; Berkowitz & Rogers, 1986) is also quite relevant. The principal tenets of the theory itself are that, when people are exposed to something in the media, ideas are generated and/or brought forth to the foreground of their thoughts and memory. For a short period of time thereafter, these ideas remain active and easily accessible, and during that time, they bring other, related thoughts and memories to the foreground. Thus, the media-provided messages are priming the thought and memory processes. Priming effects theory also postulates that "viewers who identify with certain actors may be vividly imagining themselves as these characters and thinking of themselves as carrying out the depicted actions. Identification with characters in the mass media should activate high imagery thoughts and the subsequent priming of these thoughts might influence subsequent behavior" (Kunkel *et al.*, 1996: I-8). In the context of violence and aggression in the media, priming effects theory would posit that the antisocial messages to which viewers are exposed in the media will be combined with other information they already have about violence and aggression. The former will draw out the latter, increasing its saliency to the person and the person's actions. In this manner, priming effects theory posits, being exposed to media that contain antisocial content (which nearly all of them do in one form or another) will lead many people to think about violence/aggression, think about how well they personally can relate to the characters they are seeing on the screen, and consider

whether or not they wish to behave in a manner that is consistent with the characters they view.

In light of these theoretical models that explain the relationship between media exposure to violence/aggression and attendant beliefs, attitudes, and behaviors, we find it quite surprising that so little attention has been paid to the presence and potential impact of prosocial (i.e., positive) content in the media. Certainly, if the media can be said/expected to have an adverse impact upon people's belief structures, attitudes, and actions because of the prevalence of antisocial program content, then it would also stand to reason that these very same media could be hypothesized to have simultaneous positive effects on fostering more-humanistic beliefs and attitudes and prosocial behaviors if they contain positive, prosocial content. That is to say, if negative program content (e.g., violence, antisocial acts) can lead to negative outcomes (e.g., imitative violence, aggressive thoughts), then positive program content (e.g., helping other characters, showing concern for others' well-being) can lead to positive outcomes (e.g., helping behaviors, altruism) as well.

Research on the subject of prosocial content in the media has been very sparse, though, particularly during recent years. We find this quite intriguing in light of the findings obtained by the only published prevalence study we identified (Lee, 1988), which was a study focusing on the prevalence of prosocial content in prime-time television, conducted more than a decade ago. In that study, the author found that at least some prosocial content was found in 97% of the programs studied, with most such programs containing several positive incidents. All of the other published reports we found on the subject of prosocial aspects of the media pertained to the impact of exposure to prosocial media content; and as expected, all reported positive changes in beliefs, attitudes, or behaviors following exposure to such content. For example, Brown and Cody (1991) found that prosocial television content aimed at improving women's status-related issues resulted in more positive beliefs regarding such issues as women's freedom of choice and family planning. Lovelace and Huston (1982) conducted a review of the literature on the effects of televised messages of prosocial behaviors on children. These authors concluded that children as young as age 3 could begin to understand prosocial messages provided to them, provided that the messages were given sufficient time and attention by the children viewers themselves. Focusing on the behavioral impact of prosocial television programs on behaviorally-disordered youngsters aged 8-18, Sprafkin and Rubinstein (1982) demonstrated that exposure to prosocial content led to increases in behavioral altruism, reduced verbal aggressiveness, and reduced destructive behaviors compared to children and adolescents who were not exposed to similar programming. Rosenkoetter

(1999) also found that exposure to prosocial television programming led to increased prosocial behaviors among first, third, and fifth graders.

In the present study, we examine the prosocial content of one medium that, we contend, is likely to provide people–particularly young people–with some of their earliest media-provided notions regarding altruistic and other positive messages: animated cartoons. We have chosen animated cartoons as the focal point of this research for a few reasons. First, people are exposed to this type of medium beginning at an early age. Therefore, prosocial messages provided by this particular medium are likely to be influential in the initial stages of developing beliefs and attitudes about goodness, kindness, helpfulness, and altruism. Second, for most young people, this exposure continues for many years, and typically entails repeated and frequent media content exposures during that entire viewing period. Thus, animated cartoons also help to crystallize young people's prosocial beliefs and attitudes, while helping to shape relevant behaviors through the repeated and consistent positive messages they provide. Research has shown that early-life exposure to media messages does, indeed, affect the formation of attitudes and contributes to the crystallization of notions about a variety of aspects of young viewers' social worlds (Greenberg, 1982; Tiggemann & Pickering, 1996).

In this research, we address the following issues: (1) How prevalent are prosocial messages in animated cartoons? (2) Has this prevalence changed over time? (3) What types of prosocial actions are shown most often? (4) When prosocial content is provided, what are the implied reasons underlying the positive things that characters do for one another? (5) What "types" of characters tend to be more/less prosocial than others? The paper concludes by discussing the implications of these findings for people who are exposed to the media, in particular for young people who are the most heavily exposed to the specific medium under scrutiny here.

# Methods

## Sampling Strategy

This study is based on an examination of the content of animated cartoons. For the present study, only animated *cel* cartoons are included in the sample (e.g., Bugs Bunny, Popeye, Mighty Mouse, Yogi Bear). This eliminates from the present study such types of animation as claymation (e.g., Gumby and Pokey, the California Raisins), pixillation (the type of animation usually seen at the end of

*The Benny Hill Show*), and puppet animation (e.g., *Davey and Goliath*, George Pal's *Puppetoons*).

The cartoons chosen for the study sample were selected randomly from among *all* cartoons produced between the years 1930 and the mid-1990s by *all* of the major animation studios. Before drawing the final sample of cartoons that would be viewed and coded for this work, the researchers had to develop a comprehensive and inclusive sample frame of cartoons produced by the aforementioned animation studios. Published filmographies (Lenberg, 1991; Maltin, 1980) provided the authors with a great deal of this information, and in some instances, the animation studios themselves were contacted and asked to provide comprehensive episode-by-episode lists of animated cartoons they had produced.

The origination date for this research (1930) was chosen for four reasons: (1) many major animation studios had begun operations by that time, (2) the era of silent cartoons had virtually ended, (3) cartoons produced prior to 1930 are not very accessible today, and (4) many cartoons produced during the 1930s are still broadcast on television and/or available for viewing on home video. Due to the fiscal constraints of the funding program, only animated cartoons with a total running time of 20 minutes or less were included in the sample frame.

A stratified (by decade of production) random sampling procedure was used to ensure that cartoons from all decades were represented equally in the study sample. This stratification procedure was necessary because very different numbers of cartoons have been produced during different decades (e.g., many more were produced during the 1980s than during the 1930s), thereby leading to the risk that a general random sample (as differentiated from this study's stratified random sample) might have led to an overrepresentation of certain decades during which greater- or lesser-than-average numbers of particularly-prosocial or particularly-violent/aggressive content were portrayed.

## Data Collection

This study relied upon a content analysis approach to examine the types of messages that cartoons provide about prosocial behaviors. Data collection for this research entailed viewing the cartoons contained on the project's sample list and recording detailed information on predesigned, pretested, pilot tested, fixed-format coding sheets. Prior to beginning their viewing and coding work for this study, research assistants underwent an intensive training that familiarized them with the data that the study strived to collect, the rationale underlying the coding

of each piece of information, and the decision-making procedures that should be used when recording information from each cartoon. To make sure that all people involved in the viewing/coding (i.e., data collection) process implemented the decision-making procedures in a similar manner, intercoder reliability coefficients were calculated periodically throughout the project. Reliability estimates consistently were above .80 for all major measures, and were at least .90 for all of the variables used in the analyses reported in this article, indicating a very high level of intercoder reliability for this research.

To understand the information that this study contains, it is best to conceptualize the database as consisting of three datasets. Dataset #1 focuses on the cartoon itself as the unit of analysis and contains macro-level variables that provide prevalence-type information. Among several others, this dataset includes such measures as the cartoon's length; number of characters of each gender, race, age group, and so forth; number of times using or making reference to various legal and illegal drugs; and number of prosocial and antisocial acts committed. This dataset facilitates analyses indicating the proportion of cartoons containing at least one prosocial act (with comparable information available regarding violence), how these proportions changed over time, or identifying the rate of seeing prosocial acts per hour. $N = 1{,}221$ for this dataset.

Dataset #2 focuses on the major characters in each cartoon (regardless of whether they are human characters, animals, personified inanimate objects [e.g., cars with the ability to growl or dance, telephone poles given human-like abilities to see or hear or sing], monsters, ghosts, etc.), providing detailed information that is of value when trying to interpret the types of messages that cartoons provide about who it is that is shown to perform a prosocial act. This dataset contains information about each major character's gender, age, race, ethnicity, marital status, level of intelligence, attractiveness, physique, occupational status, level of goodness or badness, and other demographic-type and descriptive information. In addition, Dataset #2 contains data about the number of acts of violence, aggression, and prosocial behaviors (and limited information about the types of these behaviors involved) that the characters have committed. This dataset's information is useful for examining such things as whether males/females are more likely to do something prosocial, whether such acts are more likely to be undertaken by characters that are attractive or unattractive, intelligent or unintelligent, and so forth. $N = 4{,}201$ for this dataset.

Dataset #3 is a comprehensive repository of information about each specific violent, aggressive, or prosocial act performed by a major character. For each prosocial act, information is available regarding the specific type of act performed, the purported reason(s) why the character in question performed each

specific prosocial act, and some descriptive characteristics (e.g., gender, age, race/ethnicity, attractiveness, etc.) of the person or character who was the beneficiary of the positive action. This database can be linked to the character dataset mentioned above, to connect all of the information contained therein with the more-detailed information contained in the prosocial act-specific dataset. Dataset #3 contains information for 2,960 prosocial acts.

## Operational Definitions of Some Key Concepts

Perhaps the most important operational definition to provide for this study is that used for identifying prosocial behaviors. In this research, a prosocial behavior was defined as "anything that one character does or tries to do for the benefit or assistance of another character, or as anything that one character says directly to another character for the benefit or assistance of that character." Using this definition, giving a character a birthday cake as an expression of sincere "happy birthday" wishes *would* qualify as a prosocial act (because the giving of the gift was intended to benefit the recipient by making him/her/it feel better) whereas giving a character a birthday cake that contained a firecracker inside of it *would not* qualify as a prosocial act (because the principal intention of the act was that of conducting a practical joke or injuring the character).

In this study, we collected prosocial behavior data only for major characters. Coders were instructed to follow these rules in order to determine whether a character was "major" or "minor": First, all characters were supposed to be classified *by default* as minor, unless the conditions stipulated in one or more of the subsequent rules were met. Second, if a character appeared in an average of at least two camera cuts[1] for each complete minute or additional partial minute[2] of the cartoon's running time, that was sufficient to label it a "major" character. For example, if a cartoon had a total running time of 8 minutes and 10 seconds, a character would have to appear at least 18 times (i.e., in 18 or more camera cuts,

[1] The best way to understand the concept of "camera cut" is to think of looking through the lens of a camcorder, as if one were about to begin filming. Whatever is seen through the lens is in the field of vision. If someone were to move outside of the field of vision and then return to it, either because of his/her own movement or because of the movement of the camcorder's field of vision, that would constitute ***two*** camera cuts by this study's definition—one when he/she was initially in the picture, and a second one when he/she returned to view again after the temporary disappearance.

[2] Time increments for these computations were based in much the same manner that parking garage fees are based. If someone stays for one hour and fifteen minutes, that person is charged for two hours. Likewise, in this study, if a cartoon had a running time of eight minutes and ten seconds, the computations for major/minor character are based on a nine-minute-long cartoon rule.

[that is, two per minute or partial minute of running time, multiplied by nine minutes/partial minutes increments]) throughout the duration of the cartoon in order to be considered "major" using this criterion. Third, a character could be considered "major" if it spoke an average two sentences or phrases counting as sentences[3] per minute or partial minute of the cartoon's total running time. Fourth, a character could be considered "major" if it had an average of three or more camera cuts in which it appeared and sentences or phrases counting as sentences per minute of the cartoon's running time. This criterion was implemented to take into account that many consequential characters in the cartoons do not appear a lot and do not say a lot, but their cumulative visual and verbal presence in the cartoon merits "major" character status even though the two previous rules would have prevented such a designation from being made. Finally, a character could be considered "major" if it appeared on screen for at least 20% of the cartoon's total running time, *regardless of the number of camera cuts and sentences or phrases counting as sentences spoken*. Generally speaking, although these rules may seem to be somewhat convoluted, determining whether a character was a major or minor one was an easy, straightforward, and relatively-obvious process.

## Analysis

Many of the findings reported in this paper are based on descriptive statistics, particularly where prevalence estimates are used, as was the case for addressing Research Questions 1, 3, and 4. Changes over time (Question 2) are examined using simple regression whenever the dependent variable is continuous in nature (e.g., number of prosocial acts performed) and using logistic regression whenever the dependent variable is dichotomous (e.g., whether or not a cartoon contained any prosocial acts, whether or not a character did anything prosocial). The analyses examining the characteristics associated with which "types" of characters (Question 5) were more/less likely than others to engage in prosocial behaviors entailed the computation of odds ratios (ORs), with 95% confidence intervals ($CI_{95}$) presented for each estimate. Results are reported as statistically significant whenever $p<.05$.

[3] Many dialogs and verbal exchanges or utterances do not involve complete sentences, but instead, are based on "shorthand" responses that take the place of complete sentences. For instance, if someone asked "How are you doing today?" and the response given was "fine," in this study, the "fine" reply would be considered one phrase counting as a sentence, since it is the functional equivalent of a "I am doing fine." complete-sentence response.

# Results

## Prevalence of Prosocial Content

More than half of the cartoons studied (55.8%) contained at least one prosocial act committed by a major character. Figure 1 shows that, over the course of time, cartoons became increasingly likely to include at least some prosocial content ($p<.0001$). In fact, from the early 1930s to the mid-1990s, the likelihood of a cartoon containing at least one prosocial act performed by a major character approximately doubled.

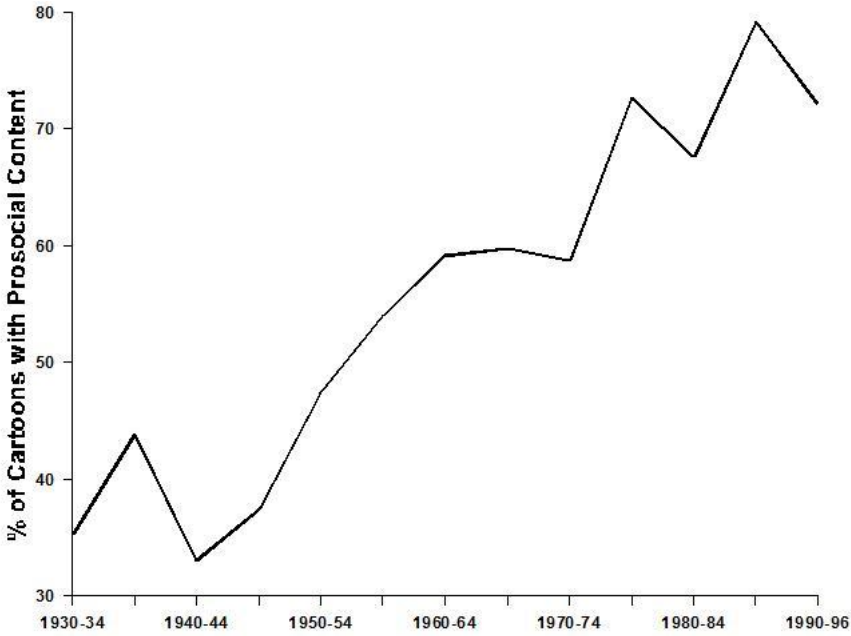


Figure 1. Prevalence of Prosocial Cartoon Content over Time ($p<.0001$).

Further analysis of these data revealed that cartoons with at least some prosocial content performed by a major character contained, on average, 3.3 such acts (s.d. = 3.4). As Figure 2 shows, this also changed dramatically over time ($p<.0001$). From the early 1930s to the mid-1990s, when a cartoon contained any prosocial content at all, the average amount of prosocial content approximately doubled. When this information is converted into rates of prosocial behaviors per television viewing hour (i.e., 45 minutes of programming + 15 minutes of

commercials), we find that, on average, 11.2 prosocial acts are shown each hour that someone watches cartoons.[4] Corresponding with the aforementioned increases in the prevalence of cartoons containing prosocial content and the amount of prosocial behavior shown per cartoon, the rate of prosocial behaviors also has risen dramatically over time ($p<.0001$).

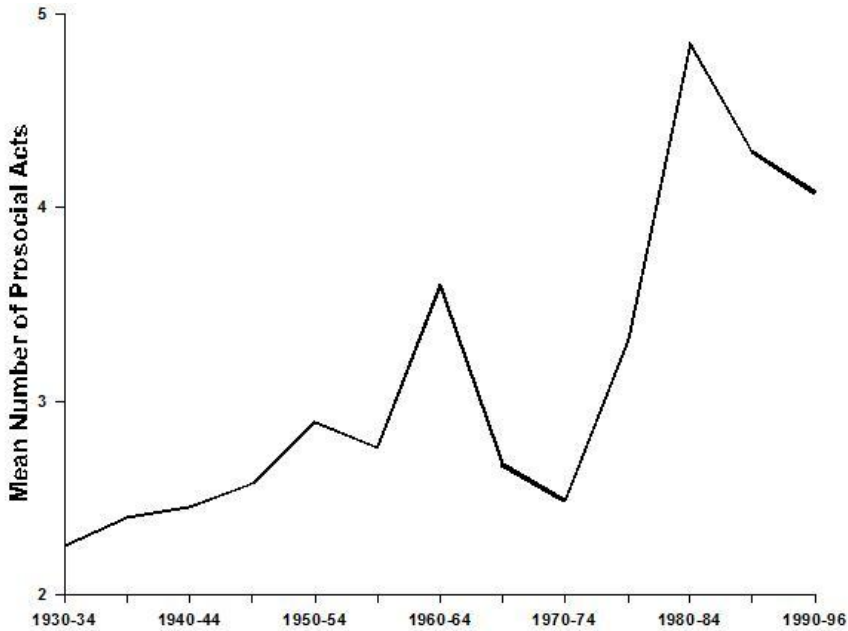


Figure 2. Amount of Prosocial Cartoon Content over Time*.

As time progressed, cartoon characters also became increasingly likely to perform at least one prosocial act. Figure 3 depicts this relationship over time and shows that the proportion of all major characters that engaged in at least one prosocial behavior nearly doubled from the early 1930s until the mid-1990s ($p<.0001$). At the beginning of the study period, this proportion was slightly less than 20%; at the end, it was slightly less than 40%.

[4] If one converts this to viewing hours based on VHS or DVD usage in the home (rather than using the more-conservative estimate provided by reliance upon the assumption that the viewing is occurring on commercial television), then animated cartoon program viewers are exposed to 14.9 prosocial acts per hour.

* Based on cartoons containing at least one prosocial act performed by a major character.)

## Types of Prosocial Behaviors Portrayed

In all, there were numerous specific types or categories of prosocial acts examined in this research. The most common of these was providing some type of physical assistance to another character. This could include such actions as rescuing another character from impending harm, helping a character to reach something that he/she/it could not reach, opening a door as an act of courtesy, or helping a character to carry something, among others. More than one-third (34%) of all prosocial acts coded fell into this category. Also fairly common were demonstrations of empathy or sympathy for another character's plight or situation, or demonstrations of genuine concern for another character's physical well-being, which comprised 14% of the prosocial acts we coded. Giving praise to another character or complimenting another character's appearance or performance of some task also occurred with relative frequency, constituting 14% of the prosocial acts we recorded. Demonstrating a romantic-type (as differentiated from a platonic-type) of affection for another character, either through a physical act such as a hug or kiss or through a verbal act like an "I love you," was the next-most-common type of prosocial behavior we observed, accounting for 13% of all prosocial behaviors.

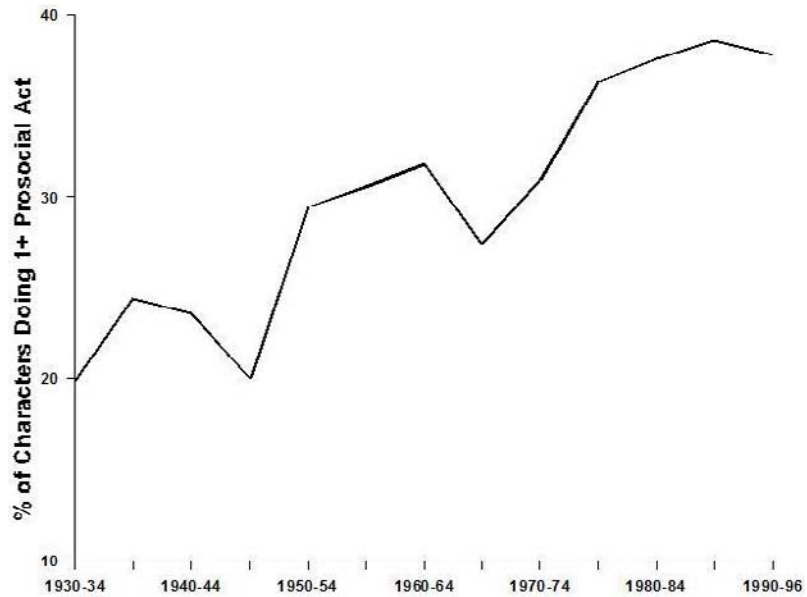


Figure 3. Prevalence of Major Characters Committing Prosocial Behaviors over Time.

Together, these five types of positive actions accounted for about three-quarters of all prosocial acts we coded.

Other types of prosocial behaviors were portrayed, too. In descending order of prevalence, these included: nonromantic-type or platonic-type affection (e.g., a friendly or consoling hug, a pat on the back to connote a job well done, a remark about considering another character to be one's best friend, etc.) (8%); offering another character the benefit of one's insights, knowledge, advice, or experience (7%); flirting with another character (usually undertaken to make the character feel good about himself/herself/itself rather than as a genuine expression of romantic or sexual interest) (7%); giving a character a gift or a present of some type (1%); and providing the character with some type of needed monetary-related assistance, such as giving money to a poor person or food to a hungry person (<1%).

## Reasons for Engaging in Prosocial Behaviors

Coders were given the opportunity to identify up to three implied reasons why characters that performed a prosocial act elected to do so. The most-commonly suggested reason for committing a prosocial act was as a demonstration of concern for another character's physical well-being, such as might be the case when the character was in danger of being injured. This reason accounted for 26% of all prosocial acts we observed. The next-most-frequent rationale underlying prosocial behaviors occurred in 20% of all instances, and entailed the desire to express a physical attraction to or a romantic interest in another character. A character's inherent kindness or good-naturedness was another frequently-implied reason for engaging in a prosocial act, an occurrence that was noted for 19% of all instances. The last frequently-seen type of reason for committing a prosocial behavior was to demonstrate friendship or camaraderie with another character. This rationale applied to 17% of all instances of prosocial behaviors coded in the cartoons we studied. Less-frequently-observed reasons for engaging in prosocial behaviors included, in descending order, rewarding another character for doing something nice or congratulating another character for accomplishing something (7%), showing/expressing admiration for another character or another character's actions (6%), expressing gratitude (3%), and simply doing one's job (i.e., the prosocial act was not done for altruistic reasons, but rather, because it was a part of performing one's job-related duties or functions) (3%).

### Characteristics of Those Engaging in Prosocial Behaviors

Female characters were nearly 25% more likely to engage in a prosocial act than male characters were (OR = 1.23, $CI_{95}$ = 1.02 - 1.49, p<.05). Age differences in practicing prosocial behaviors were also found, with youths being nearly 50% more likely than their adult and elderly counterparts to do something positive for another character (OR = 1.48, $CI_{95}$ = 1.25 - 1.77, p<.0001). African-American characters were more likely than those whose race was something other than African American to engage in at least one prosocial behavior (OR = 1.69, $CI_{95}$ = 1.01 - 2.87, p<.05). Body weight was also found to be a distinguishing trait of those characters engaging in prosocial behaviors, with underweight or thinner-than-average characters being nearly twice as likely as those of average or heavier-than-average weight to commit at least one such action (OR = 1.89, $CI_{95}$ = 1.30 - 2.73, p<.001). Physical attractiveness was also a discerning factor in whether or not characters engaged in prosocial behaviors. Nice-looking characters were considerably more likely than their unappealing-looking or ordinary-looking counterparts to do something prosocial (OR = 1.68, $CI_{95}$ = 1.24 - 2.28, p<.001), and conversely, characters that were below-average in looks were far less likely than their ordinary-looking or better-than-average-looking counterparts to engage in at least one prosocial act (OR = 2.05, $CI_{95}$ = 1.46 - 2.88, p<.0001). Prosocial behaviors also differed based on the "perpetrator's" level of intelligence. Intelligent characters were nearly three times as likely to engage in a prosocial act as their average- or below-average-intelligence counterparts (OR = 2.96, $CI_{95}$ = 2.17 - 4.03, p<.0001). Not surprisingly, characters that engaged in any prosocial behaviors were one-quarter less likely to commit at least one act of violence than their counterparts who did not do anything positive for another character (OR = 0.75, $CI_{95}$ = 0.65 - 0.85, p<.0001).

No differences in the likelihood of a character performing a prosocial act were found based on characteristics such as height (p<.15), illegal drug usage (p<.60), or involvement in any antisocial behaviors other than violence (p<.70)

## Discussion

This study has shown that animated cartoons–a mass medium that many people associate principally with children and adolescents–contain a great deal of prosocial content. More than half of all cartoons we studied provided at least one positive message by showing a character doing something nice for another character; and this figure has risen sharply over the course of the past several

decades. Coinciding with this, over time, there has been nearly a doubling in the proportion of cartoon characters that engage in at least one prosocial act, nearly a doubling in the amount of prosocial acts performed by those characters that do anything prosocial, *and* nearly a doubling in the actual rate at which prosocial content appears in cartoons. On average, viewers are exposed to more than 11 prosocial messages each and every hour that they watch cartoons. When one considers that the average American child watches anywhere from 3.5 to 5 hours of televised/movie programming each day (Federal Communications Commission, 2003; Roberts *et al.*, 1999; Kid Source Online, 2000) and that nearly 85% of the homes in which these children live now have satellite or cable television programming (Media Audit, 2003) that make animated cartoons available to them virtually any time of the day, seven days a week, this amounts to a very substantial cumulative exposure to prosocial content via the animated cartoons that young people (and in many instances, their parents, too) watch.[5] The effects of seeing so many positive things taking place are likely to be substantial, as the main tenets of social learning theory, cultivation theory, and priming effects theory would be quick to point out.

Moreover, our study reveals that animated cartoons not only show prosocial behaviors with great (and increasing) frequency but also that they portray a wide variety of such behaviors and provide a goodly array of reasons underlying the performance of such actions. Characters are shown to do nice things for others because they are concerned about other characters' physical or emotional well-being, because they want to express fondness for them, because they want to express their friendship, and sometimes simply because they are kind or good-natured and are acting accordingly. Indeed, these were the most common reasons intimated as to why a character in a cartoon does something positive for another character. All of these actions convey very positive messages to viewers; and we posit that there is good reason to believe that repeated exposure to such messages is likely to have a positive impact upon how viewers think and feel about others and about doing good for others around them.

At the same time, we do not want readers to think that we are unduly optimistic or "Pollyanna"ish about our findings. Unquestionably, the prosocial messages that are provided by cartoons are shown alongside numerous–in many instances, more numerous–portrayals of violent and aggressive behaviors. Indeed, our own research study is consistent with the many previously-published studies

[5] Other researchers/authors (Shifrin, 2003) claim that the average preschooler watches an average of two hours of cartoons per day, plus additional television/video programming that contains additional violence and aggression.

that have shown high rates of violent and/or aggressive content in children's programming (Klein, Shiffman, & Welka, 1996).

That animated cartoons contain considerable amounts of antisocial content is undisputed, and we readily acknowledge that exposure to these messages over time is likely to have an adverse impact upon young people in terms of increasing their propensity toward feeling and/or behaving aggressively. But we wish to make one important point: Simultaneous exposure to cartoons' positive messages also affects viewers and, theoretically, should help to counterbalance some of the adverse effects generated by the antisocial content. Abelman (1987) demonstrated, for example, that young viewers could be shown how to view television programming more critically and in a way that would enable them to derive benefits from the experience. Despite both positive and negative program content, it might be possible to instruct viewers in a manner that would help them minimize the possible adverse effects of the negative content while simultaneously maximizing the potential benefits to be derived from the positive content. This is an area that has been subject to very little, if indeed any, scientific study and would be a fruitful avenue for future research. Specifically, it would be well worth investigating the extent to which supplementing antisocial content with prosocial content alters people's beliefs and attitudes regarding prosocial and antisocial behaviors, and the extent to which doing this might reduce the prevalence of aggressive and violent behaviors practiced by people exposed to both types of messages. Indeed, nearly 20 years ago, Gunter (1984) made a similar recommendation, noting that it is worth examining the prosocial actions of television's leading characters as well as their antisocial behaviors, since both types of acts might serve as sources of learning and behavioral influence. We believe that it also would be worthwhile to examine the attitudinal and behavioral effects of replacing antisocial content with prosocial content.

In addition to documenting dramatic increases in the prevalence of prosocial content of cartoons over the years, this study also identified a number of characteristics that are associated with being prosocial. We would like to discuss a few of these findings. To begin with, we found that females were more likely than males to engage in prosocial behaviors. This finding is consistent with documented gender differences in our society-at-large with regard to practicing prosocial behaviors, as many researchers have found females to be more prone toward altruism than males (Dietz, Kalof, & Stern, 2002; Kidder, 2002; Marini *et al.*, 1996). The message that females are more prosocial than males both stems from and helps to perpetuate existing social patterns and stereotypes regarding women being caring, loving, nurturing, helpful, and giving, compared to men for whom these traits are said to apply less often or less well. In another work (Klein,

Shiffman, & Welka, 2000), we discussed a variety of ways in which cartoons promulgate gender-based stereotypes; interested readers are encouraged to consult that work for further information and details. In the present research, we have identified one more way in which the cartoons do that: by intimating that prosocial behaviors are more the domain of females than that of males.

We also consider it noteworthy that a variety of socially-desirable traits were associated with the practice of prosocial behaviors in the cartoons we studied. For example, physically-attractive characters were far more likely to engage in prosocial behaviors than ordinary-looking or unattractive characters were. As another example, thinner-than-average characters were more apt to do something helpful or kind for another character than average-weight or heavy-set characters were. As a third example, prosocial behaviors were more likely to be performed by intelligent characters than by those whose intelligence level was average or below average. As a final example, youths were likelier than adults or elderly characters to engage in at least one prosocial act. All of these traits–physical beauty, thinness, intelligence, youthfulness–are highly-prized traits in American culture, and in the cartoons we studied, these valued characteristics were the ones most commonly linked with doing good for others.

On the surface, these findings seem beneficent enough. The problem, we believe, is that, once again, the messages conveyed by these patterns of findings are indicative of social stereotypes based on physical appearance, body weight, intelligence, and youthfulness. For instance, when cartoons tell viewers that attractive characters do good things for others, they simultaneously communicate the message that those who are ordinary-looking or unappealing-looking are not as benevolent or helpful–that is, that they are not as good. Likewise, when cartoons convey the message that thin characters are more apt to be prosocial, they also communicate that those that are heavy-set are not as likely to be "good guys" or the type of characters to which one ought to strive to be more similar. Similar negative messages are provided with regard to characters lacking in intelligence and those who are older. Numerous previous studies have shown that the media tend to portray elderly characters in a negative light (McConatha, Schnell, & McKenna, 1999; Vasil & Wass, 1993) and that they tend to communicate the message that "thin is in" and that having an attractive physical appearance matters greatly (Owen & Laurel-Seller, 2000; Stice, 1994). Moreover, some research has demonstrated a link between exposure to these types of messages and a variety of adverse attitudinal and behavioral outcomes (Owen & Laurel-Seller, 2000; Young, McFatter, & Clopton, 2001). It is for these reasons that we believe that our findings regarding the traits that cartoons associate with prosocial behavioral involvement may represent a cause for concern.

One way to remedy this potential problem, we posit, would be for the storywriters and producers of the next generation of animated cartoons to be cognizant of the messages they are conveying with their story lines and make it a point of providing balanced portrayals with regard to what types of characters are shown to engage in prosocial behaviors. Thin and heavy characters alike, unintelligent and intelligent characters alike, attractive and unattractive characters alike, and so forth, could be made to do good things for others. By balancing the depictions like this, the stereotyped patterns described above would begin to diminish.

Finally, providing counter-programming amidst televised animated cartoon episodes (or alongside such cartoons made available to consumers on home video and DVD) might also be an avenue worth exploring. One way that counter-programming could be implemented—one that we think might be worthwhile and cost-effective for the television and cable industries to consider—would be through the addition of interstitial segments in existing animated cartoon programs. Interstitials are small program segments, usually having running times ranging from 30 seconds to about 3 minutes, that can be inserted between cartoon episodes within a given program if the episodes are short enough or that can be inserted between programs during the commercial blocks that occur before and after scheduled programming is broadcast. As short-form segments, interstitials would be inexpensive to create, and their short running times would allow them to be added to a variety of children's programs without requiring the broadcaster to edit these programs for time. The interstitials could be made so that they feature the same cartoon characters shown in the original (i.e., "problematic") cartoons, but with short vignettes that are simultaneously entertaining, enlightening, and prosocially-oriented. In this manner, the original entertaining but stereotyping cartoons can remain intact and be broadcast intact while being combined with newer content that is designed to be equally entertaining but more prosocial in nature. Over the years, some studios (most notably Hanna-Barbera and Warner Brothers) and some television networks (most notably the American Broadcasting Company [ABC]) have implemented educational and/or prosocial interstitial segments into their animated cartoon programming, and these programs have been entertaining and positive in their content.[6] We applaud these efforts. Moreover,

[6] Hanna Barbera, for example, included safety-related interstitial segments into its hour-long *Superfriends* cartoon block during the mid-1970s. These featured the Wonder Twins in three-minute self-contained cartoons that focused on such topics as crossing the street safely, how to be safe underwater, how to avoid drug use, and so forth. ABC is perhaps the best known provider of interstitial animated programming with its *Schoolhouse Rock* interstitial between-program segments featuring well-known vignettes like "I'm Only a Bill," "Conjunction Junction," and "Interplanet Janet." Most recently, the Warner Brothers studio's cartoon

some research has been conducted on the effects of counter-programming, generally showing at least some measure of success in accomplishing its goals (Power, Murphy, & Coover, 1996). We believe that this type of approach merits further exploration in the years to come.

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programs *The Animaniacs* and *Pinky and the Brain* incorporated highly-entertaining interstitial animated cartoons of one to three minutes in length, focusing on such subjects as the names of various countries of the world, different types of cheese and the countries from which they originate, and the elements of the periodic table.

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*Chapter 3*

# BEYOND FEAR APPEALS IN HEALTH MESSAGING: THE EXAMPLE OF SMOKING CESSATION CAMPAIGNS

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## Abstract

Over the past 20 years, significant evidence has accumulated supporting the use of mass media campaigns in smoking cessation efforts. Studies across Australia [1-4], Massachusetts [5-7], California [8, 9], Wisconsin [10, 11], Oregon [12], Britain [13], Texas [14, 15], and others have shown that smoking cessation campaigns can change beliefs and attitudes about quitting, increase motivation to quit, and stimulate quit attempts. For example, results of the original Community Intervention Trial for Smoking Cessation study (COMMIT), conducted from 1988-1993 and spanning across nine states and Ontario, Canada, showed that smokers were 10% more likely to quit for every 5000 units of exposure to state anti-tobacco television advertisements [2]. In California, 34% of former smokers said that the state-sponsored smoking cessation media campaign was influential in their decision to quit [9]. Estimates indicated that the campaign accounted for 21% of the 10-13% decline in cigarette consumption [16] and a reduction of cigarette sales by 232 million packs between 1990 and 1992 [17]. Despite such promising results, it is unclear how mass media campaigns work to influence cessation-related behavior, and how best to construct and use campaigns to achieve this goal. A review of the literature confirms this: there is no easy

solution, no best solution and no one solution. To reach and engage such a broad and diverse population as smokers, a multifaceted and dynamic approach may be the only answer.

## Introduction

Smoking cessation mass media campaigns have used a range of message strategies to reach their target audience [18, 19]. These include: evocative testimonials from smokers [20]; advertisements emphasizing that quitting is difficult but smokers should keep trying [14, 21]; advertisements focused on the harmful effects of second-hand smoke [17]; humorous or entertaining advertisements [5]; and others. One prominent style of health messaging, and that which has arguably received the greatest attention, is commonly termed 'threat' or 'fear' appeals. Fear appeals are persuasive messages designed to detail the harmful physical and social consequences of failing to comply with the message recommendation [22]. This message strategy has been used for decades, and while there is debate about its role in health communications [20, 23], numerous studies have shown that fear appeals can stimulate behavioral change in certain groups and have been effective in communications addressing alcohol abuse [24], sexually transmitted diseases [25], seatbelt use [26], speeding [27], skin cancer [28] and smoking cessation [29, 30], among others.

The rationale behind why and how fear appeals work to produce desired health and behavioral outcomes has been the subject of much consideration. One prominent theory is Witte's Extended Parallel Process Model (EPPM) [31, 32], which states that exposure to fear appeals results in two message appraisal processes: 1) threat appraisal; and 2) efficacy appraisal. Threat appraisal refers to a personal assessment by the individual of the severity of the threat and their susceptibility to the threat. Efficacy appraisal refers to an individual's assessment both of their own self-efficacy, or belief that they are able to perform the recommended behavior to avert the threat, as well as response efficacy, or perception of the effectiveness of the recommended response. The ability of fear appeals to engage and promote positive change in any given individual is dependent on both of these appraisal processes, and has been found to be most effective when both threat appraisal and efficacy beliefs are high. An individual who is exposed to a fear appeals message needs to, first and foremost, feel a threat. Only if this threat is felt will they even consider efficacy information [32], and only if perceived efficacy is high will an individual partake in what they confidently consider an appropriate response to reduce

their feelings of threat [32]. However, if there is neither a proper perception of threat, nor a strong efficacy appraisal, fear appeals may not necessarily work. Worse, they may produce a maladaptive response [25]. Fear appeals, therefore, have the potential to work very well in some individuals [33], but not so well in others.

In this chapter, we examine the ability of fear appeals to promote attitudinal and behavioral change by assessing evidence from mass-media smoking cessation campaign evaluations. Since so much of the evidence assessing the effectiveness of fear appeals is based on small, non-representative samples, it is important to examine its impact more broadly on the population. Although the focus here is on the use of fear appeals in smoking cessation campaigns, lessons learned may inform efforts in other public health areas as well.

Perhaps the best documented example of the effectiveness of fear appeals in smoking cessation is the Australian National Tobacco Campaign (NTC). Referred to as "the mother of all scare campaigns" [34], the Australian NTC was a mass-media-led campaign launched in June 1997 and subsequently used by the state of Massachusetts Tobacco Control Program and abroad, including Singapore, New Zealand and British Columbia [35]. The campaign was targeted at 18-40 year old smokers with the message that "every cigarette is doing you damage" [34]. A series of six television advertisements featured graphic depictions of smoking-related damage to the arteries, lung, eye and brain, as well as potential consequences of continuing to smoke, including lung cancer, stroke and blindness. These advertisements appeared to produce results; respondents showed high recall of the advertisements, with 88% having confirmed awareness [1]. Almost half of smokers (49%) who had seen the advertisements claimed it made them more likely to quit, and 44% of quitters reported that it helped them to stay quit [1]. Calls to the Quitline increased [36], and the smoking prevalence of Australia dropped to an all-time low of 22% [35]. The apparent conclusion from this data is that 'scare tactics' work.

While there is evidence that fear can have direct effects on smoking intentions [29], the Australian NTC advertisements were specifically designed to include other emotionally-arousing elements that should not be overlooked. In their manuscript, Hill and colleagues [34] cite seven facilitators of behavior change that the Australian NTC developers hoped to address in their communications. These included: 1) reassessing personal relevance, importance and urgency; 2) increasing self- and response-efficacy; 3) gaining fresh insights; and 4) remembering to do the behavior [34]. Furthermore, the campaign intended to translate what is known scientifically about smoking into a 'felt' experience,

rather than a cognitive appreciation of risk, by developing what was termed empathetic 'smoker moments' [34].

The Australian NTC advertisements, therefore, reflected a sophisticated blend of emotionally-arousing elements designed to enhance the target audience's connectedness and receptivity to the message, increase knowledge, and empower smokers to change the way they think about smoking. Using graphic and fear-producing elements, the advertisements were crafted with what is termed high 'sensation value', which has been shown to increase viewer's attention, enhance ad recall, and stimulate motivation and intention towards the target behavior [37]. While graphic or threatening content can have high sensation value, other non-graphic advertisements can as well. What appears more critical is the ability of the advertisement to emotionally engage an audience. This is underscored by the finding that the highest correlations between advertising dimension and perceived effectiveness of anti-tobacco TV advertisements were between effectiveness and the *strength* of the emotional appeal, rather than the negative appeal itself. This was true in quitters (correlation of 0.94), continuing smokers (correlation of 0.91) and non-smokers (correlation of 0.95) [5].

Several lines of evidence suggest that the emotional arousal produced by an advertisement is ultimately what determines its overall effectiveness. As compared to non-emotional advertisements, emotional advertisements are remembered more, [38] and are more likely to promote higher-order cognitive processing [37, 39]. Although emotional arousal can be stimulated by either negative or positive emotions, it appears easier to arouse high emotion with negative messages [5]. This may be one reason why 'fear appeals' are often chosen as the strategy of choice for health messaging. However, this does not need to be the case. One example is American Legacy Foundation's (Legacy) EX campaign, which was crafted to have an empathetic, honest, smoker-to-smoker voice [40], intended to break through the distressed mindset of a smoker who is struggling to quit. Unlike the Australian NTC, the EX advertisements do not use fear tactics. Yet, data from the first follow-up of the national study showed that respondents had a 24% greater chance of making at least one quit attempt and a trend towards greater abstinence (article in press).

It is well known that mass media messages are mediated in various ways by friends and significant others [10, 41, 42] and are of varying effectiveness across demographic subgroups and environmental contexts [43] [44]. The increasing social stigmatization of smoking [45] and changing federal, state and local tobacco policies likely also affect processing and response to cessation media messages. The influence of other tobacco-related advertising, including those

sponsored by the tobacco and pharmaceutical industries, cannot be dismissed. A 2005 study showed that pharmaceutical companies were the largest sponsor of tobacco-related advertising for households in the United States. Furthermore, an analysis of television advertising exposures from Nielsen Media Research for the largest 75 media markets in the United States from 1999 to 2003 showed that tobacco company advertising matched or exceeded public health sponsored anti-tobacco campaigns by a factor of 1.57 to 1.00, and among youth by a factor of 1.11 to 1.00 [46].

The degree to which similar or competing advertisements shape responses to any one smoking cessation campaign is unknown. Given the number and variety of tobacco-related messages, it is challenging to isolate the impact of any one messaging strategy to reach, engage and promote behavior change in a target audience. During the Australian NTC in 1997, for example, the pharmaceutical company Pharmacia Upjohn launched a television advertising campaign for 2 mg Nicorette gum as a smoking cessation aid, and this corresponded with a rise in a composite measure of quitting intentions and activity in Australia [4]. Given this, and possible other influences, it would be difficult to attribute the quitting activity in Australia solely to the fear appeals message of the NTC.

Similarly, during the campaign of the Massachusetts Tobacco Control Program, television advertisements were being broadcast by Legacy, Philip Morris and Lorillard Tobacco Companies, as well as pharmaceutical manufacturers of nicotine replacement therapy and Zyban [43]. In fact, a 1999-2004 evaluation of the Massachusetts Tobacco Control Program campaign entitled “Real People, Real Stories”, which used testimonials about the dangers of smoking [20], assessed not only the total effect of “Real People, Real Stories” but also numerous other state- and Legacy-sponsored advertisements airing at the same time. The data showed that potential exposure to total tobacco control advertisements increased the odds of quitting by 11% with each 10 additional potential exposures [6]. However, it is unclear how much each particular advertisement or type of message strategy contributed to this successful outcome.

Even among non-industry anti-tobacco advertisements, there are often multiple types of advertisements from numerous and distinct sources on air simultaneously. In Massachusetts between 1999 and 2002 [6], for example, there were 134 different anti-tobacco television advertisements delivering messages of prevention and cessation. An evaluation of the California Tobacco Control Program between 1997 and 1998 included 40 media campaign spots that targeted the state’s population overall (20 on television, 12 on radio, and 8

in outdoor locations). Of the total campaign expenditures, 44% was allocated to spots focused on reducing environmental tobacco smoke, 34% on countering protobacco influences, 20% on smoking cessation, and 2% on reducing youth access [47]. An analysis of Quitline calls generated as a result of the Oregon anti-smoking media campaign outlined 8 separate advertisements along with 6 radio advertisements [12]. Given the diversity of advertisements, increasing complexity of delivery channels, and escalating cumulative exposure to such messages, not only is it a challenge to isolate the effects of one advertisement or strategy, but it can be increasingly difficult to anticipate or understand how one campaign's effects may be shaped or determined by others. Since many of the most successful campaigns have admittedly integrated a complex mix of emotionally-arousing elements, including fear and empathy, systematically disentangling these elements and understanding how these elements interplay within and across advertisements to attract and engage the target audience is a challenge.

While fear appeals certainly have their place in health campaigns [33], it is unlikely that this messaging style alone will ensure an effective response across all sub-populations within a target audience. Although fear appeals may prompt cognitive or behavioral responses in certain individuals [48], this effect has been found to vary [49, 50]. Lower effectiveness of fear appeals has been reported in younger individuals [51], [50], those who had no choice but to be exposed to the message [52, 53], unconverted or unconvinced populations [3], those in the precontemplation stage of change [54], those concerned with cost [22], and 'anxious' people [51], among others. Socioeconomic status (SES) may also contribute to differential effectiveness of fear appeals. For example, using information on Gross Rating Points (GRPs) derived from Nielsen Media Research, data from the Massachusetts Tobacco Control campaign showed that the odds of quitting increased 14% for each 10 additional potential exposures to highly emotional advertisements and personal stories, most of which were fear appeals. However, this effect was only apparent within low- and mid-SES groups. Those in the high-SES group were actually *less* likely to quit [6]. Effectiveness can also be influenced by other elements in the advertisement. For example, when paired with disgust-related content, recall of fear appeals advertisements can actually become significantly impaired [55]. Finally, fear appeals may trigger defensive responses in certain individuals [56], especially when paired with messages that promote response- and self-efficacy [33].

Fear appeals also may become ineffective over time through desensitization, avoidance, and counter-argumentation [57], as well as minimization and selective or biased processing of the health threat [58-60] [27, 61]. Continuous tracking of the Australian NTC in 1997 through 1999 showed that there was an initial increase in respondents who reported thinking about quitting "at least daily" from 25% at baseline to 35% a few weeks into the campaign. Over time, this percentage slowly declined to baseline levels [4]. Similarly, the percentage of respondents indicating that they were likely to quit as a result of recent advertising dropped from 70% in the initial campaign period to 50% over two years [4]. Lastly, although 23% of respondents reported learning something new about the effects of smoking cigarettes from the campaign in 1997, only 18% endorsed this in 2000 [1]. All of the potential long-term effects of fear appeals listed above may be particularly relevant in areas where both state and national campaigns air advertisements with the same or similar messaging strategy.

Although there is growing evidence suggesting that fear appeals may be effective in promoting smoking cessation, it is too early to conclude that they are the most effective means of population-level behavior change. This is due to the limited number of peer-reviewed evaluations of cessation campaigns in general, and even fewer evaluations examining the specific behavioral effect of the fear appeal message. Most peer-reviewed published studies conducted thus far to evaluate smoking cessation campaigns, including those in Massachusetts, California, Wisconsin, Oregon and others, have assessed responses to a range of advertisements running simultaneously using variable message coding and analytic methodology. There is also limited information on how these messages contribute to behavioral change, including quit attempts and sustained abstinence. The table below illustrates the range of some of the more prominent campaigns within the last twenty years:

Despite the numerous studies conducted, a side-by-side comparison highlights the dearth of large, population-based studies that specifically address the effectiveness of specific fear appeals or other advertisements in promoting cessation-related behavior change. Further research is needed using representative samples, comparable message coding and analytic methodology, and controlling for exposure to competing advertisements. Studies will also need to be more focused on identifying effects of specific advertisements in order to determine the optimal use of fear-based and other messaging styles in promoting changes in cessation-related beliefs, attitudes and behavior.

## Table 1.

| Media Campaign | Years of Study | Types of Smoking-Cessation Advertisements Evaluated in Study | Outcomes |
|---|---|---|---|
| British Columbia* [62],[63] | 2004-2005 | Television, radio and poster campaign about the short- and long-term health benefits of cessation and the short- and long-term costs of smoking[1] | Smokers attitudes;<br>Prevalence and probability of smoking;<br>Daily consumption of cigarettes |
| Massachusetts [6] | 1999-2004 | A total of 134 advertisements categorized as:<br>1) Highly emotional and personal testimonial advertisements,<br>2) Highly emotional advertisements that did not include personal testimonials,<br>3) Personal testimonial advertisements that were not highly emotional, and<br>4) Comparison advertisements [2] | Cessation at follow-up by advertisement type and additional potential advertisement exposures |
| Massachusetts[43] | 2001-2002 | 1) Illness theme<br>2) Inspirational quit tip<br>3) Others[1] | Types of cessation aids used among former smokers and perception of their helpfulness |
| Wisconsin[11] | 2003-2004 | 1) Secondhand smoke advertisements,<br>2) "Keep trying to quit" advertisements | Targeted knowledge of smoking;<br>Quit attempts;<br>Smoking abstinence |
| Oregon[12] | 1988-2002 | Multiple television and radio advertisements, with themes of:<br>1) How to quit smoking,<br>2) Reasons to quit smoking,<br>3) Family testimonial smokeless,<br>4) Secondhand smoke,<br>5) Smoker testimonial,<br>6) Family testimonial smoking,<br>7) Smokeless user testimonial | Cost per call for television ad buys;<br>Cost per call for radio buys |

| Media Campaign | Years of Study | Types of Smoking-Cessation Advertisements Evaluated in Study | Outcomes |
|---|---|---|---|
| New Zealand [64] | 2002-2003 | Four separate campaigns, including:<br>1) The "Every cigarette is doing you damage" threat appeals campaign detailed for Australia (see below),<br>2) The "It's about whānau" campaign, 'supportive, empathetic' advertisements that use personal testimonials with themes that include the promotion of quitting and being smoke-free for health and to protect whānau (family),<br>3) "World Smokefree Day" campaign,<br>4) "Let's Clear the Air" campaign | Calls to the Quitline |
| New Zealand [65] | 2000-2002 | The "It's about whānau" campaign | Recall of campaign;<br>Reactions to the campaign;<br>Cessation-related intentions;<br>Influence of campaign in prompting discussions about smoking |
| Texas [14] | Early 2000 –Late 2000 | TV and radio advertisements, with the following themes:<br>1) Animated advertisements featuring the Texas Duck,<br>2) Cigarette pack: A man who wants to quit smoking keeps a picture of his daughter in his cigarette pack as a reminder to quit,<br>3) Brother of Marlboro Man laments his passing from lung cancer<br><br>Additional radio-only advertisements:<br>4) A PSA promoting the Quitline,<br>2) Children asking parents "what will happen to us if you die" | Attitudes regarding smoking;<br>Daily smoking cessation rates;<br>Complete smoking cessation rates |

## Table 1. Continued

| Media Campaign | Years of Study | Types of Smoking-Cessation Advertisements Evaluated in Study | Outcomes |
|---|---|---|---|
| Australia NTC [3] | 2001 [6 waves] | Six television advertisements, including:<br>1) Artery: every cigarette contributes to clogged arteries;<br>2) Lung: every cigarette contributes to destruction of air sacs in the lungs;<br>3) Tumour: every cigarette increases the likelihood of genetic damage to lung cells, which could lead to lung cancer;<br>4) Brain: every cigarette increases the risk of tiny blood vessels bursting in the brain, which could lead to stroke;<br>5) Tar: every cigarette contributes to amount of tar in the lung;<br>6) Eye: every cigarette increases the risk of rupture of tiny blood vessels in the eyes, which could ultimately lead to blindness | Recall of campaign;<br>Frequency of negative thoughts about smoking and passive smoking, positive thoughts about smoking and thoughts about the conduct of tobacco companies;<br>Cessation-related thoughts;<br>Cessation-related actions |
| Australia NTC [1] | 1997-2000 | Same six advertisements mentioned above | Unprompted recall and recognition of advertisements;<br>Campaign-attributed encouragement to quit or stay quit;<br>Unprompted awareness of smoking-related health effects;<br>New learning about smoking and health;<br>Agreement with campaign-related attitudes |
| Australia NTC [4] | 1997-1999 | Same six advertisements mentioned above | Recall and recognition of advertisements;<br>Smoking-related knowledge and attitudes;<br>Cessation-related intentions;<br>Quit attempts |
| Australia NTC[36] | 1997-1998 | Same six advertisements mentioned above | Calls to Quitline;<br>Quit rates, change of smoking behavior |

| Media Campaign | Years of Study | Types of Smoking-Cessation Advertisements Evaluated in Study | Outcomes |
|---|---|---|---|
| California [47] | 1996-1998 | Forty media campaign spots (20 on television, 12 on radio, and 8 in outdoor locations). Of the total campaign expenditures during this period, 44% were allocated to spots that focused on reducing environmental tobacco smoke, 34% focused on countering protobacco influences, 20% addressed smoking cessation, and 2% focused on reducing youth access | Smoking rates;<br>No-smoking policies in homes;<br>Violations of workplace no-smoking policies |
| Massachusetts[5] | 1993-1996 | Nine separate television advertisements:<br>1) Janet Sackman: former cigarette model who lost vocal cords,<br>2) Baby monitor: Illness caused by environmental tobacco smoke,<br>3) Victor Crawford: dead ex-tobacco lobbyist apologizes for lying,<br>4) Hole in throat: A man with no vocal cords sings happy birthday<br>5) Cigarette pack: Man places a picture of his daughter on a cigarette pack as a reminder to quit,<br>6) Iron cross: benefits to babies of a smoke-free environment,<br>7) Ask your doc: A surgeon removes cigarette from hand of man,<br>8) Simple things: Mother circles a day on her calendar to quit smoking,<br>9)Cake: Grandmother, smoke free for a year, shows the strength of her lungs by blowing birthday cake off the table | Reported exposure to advertisements;<br>Perceived effectiveness of each ad |
| England [13] | 1992-1994 | Advertisements featured a celebrity figure (ex-smoker John Cleese) trying to give up smoking, trying not to relapse and imparting information about the effects of smoking on the smoker and those around them, particularly the effects on children. The advertisements are described as using morbid or “black” humor and somewhat macabre or bizarre scenarios to engage the viewer and underline the messages | Quit rates;<br>Smoking abstinence/relapse rates |

## Table 1. Continued

| Media Campaign | Years of Study | Types of Smoking-Cessation Advertisements Evaluated in Study | Outcomes |
|---|---|---|---|
| COMMIT Trial[2] | 1988-1993 | State anti-tobacco television advertisements [1] | Indicators of smoking cessation |
| California[9] | 1990-1991 | A variety of messages including:<br>1) The dangers of secondhand smoke,<br>2) The impact of smoking on one's social desirability,<br>3) Advertisements to stimulate public debate regarding the role of the tobacco industry in encouraging people to smoke,<br>4) Others [1] | Role of media campaign in influencing decision to quit |

*Two studies assessing the same campaign were included here

1. Did not specify further or could not be grouped into categories

2. Anti-tobacco messages not specific to cessation, and advertisements were too many to specify further

There is growing evidence on the effectiveness of informative, supportive or other 'positive' advertisements. Advertising and market research has shown that advertisements that bolster self-efficacy are effective [66-68], and that audiences do respond to advertisements that are entertaining, warm, and present information useful and relevant to the viewer [69]. For example, advertisements that deal practically with how to quit were found to be the most effective, along with personal testimonials, in generating calls to the Oregon Quitline [12]. Similarly, a study in Texas showed that advertisements promoting quitting assistance programs were associated with higher rates of cessation, an effect enhanced by pairing media exposure with cessation service delivery [14]. Focus group analysis of the indigenous people of New Zealand (Māori) led campaign developers to decide specifically not to use overt threat appeals advertisements and instead develop a campaign depicting Māori smokers and their extended family (whānau) delivering testimonial messages of what it was like to quit smoking. One year following the launch, 78% of Māori smokers and 73% of whānau were able to recall the campaign, and more than half of smokers (54%) stated that the campaign had made them more likely to quit [65]. Further analysis showed that this 'supportive, empathetic' campaign was successful in generating calls from Māori to the Quitline [64].

Some suggest that current advertisements may overemphasize attitudes while underemphasizing social norms, barriers to quitting smoking and individuals' self-efficacy [70]. A series of qualitative pilot research studies conducted in four TV regions in central and northern England and using focus groups and in-depth interviews with smokers and ex-smokers led the researchers to conclude that "health shock" publicity was not the most appropriate approach. Instead, they identified the following campaign objectives: 1) motivate smokers to attempt to give up by providing information on the health risks of smoking; 2) provide advice for smokers' efforts to quit and stay quit; 3) display an understanding of the difficulties of stopping; and 4) build smokers' confidence in their ability to stop [13]. In their analysis of message framing in the New York State Smokers' Quitline materials, Latimer and colleagues (2010) [71] argue that smoking cessation messages are most persuasive when framed in terms of the benefits achieved from quitting (i.e. gain-framed) than when framed in terms of the costs of not quitting (i.e. loss-framed).

In summary, given the lack of conclusive evidence, further research is needed to refine our understanding of the relative effectiveness of various messaging styles to promote smoking cessation. First, there are relatively few large-scale peer-reviewed studies evaluating so-called positive and negative messaging strategies. Second, almost all of the studies have measured responses to a

heterogeneous mix of anti-tobacco advertisements running simultaneously, making it impossible to discern the effectiveness of one single strategy. Third, message frames for advertisements have not been systematically and consistently characterized across studies; some studies tend to include an excessive range of messages under the umbrella of 'positive' or 'negative'. Fourth, there is little consideration of other messages from the tobacco and pharmaceutical industries and how they influence the impact of cessation messages sponsored by government and public health organizations. Fifth, although not included in this review, some of the evidence for mass media interventions for smoking cessation are from studies evaluating comprehensive health intervention programs (e.g. cardiovascular disease). Such programs are more general and tend to combine multiple intervention approaches, making it difficult to attribute any resulting behavior change to the media messaging strategy alone [72]. Lastly, there is little analysis of the effectiveness of specific messaging strategies across demographic subgroups.

The available evidence suggests that assessment of any public education campaign should include not only consideration of the messaging strategy but also several other elements, including the respondent's level of arousal [37, 73], the advertisement content, the audience characteristics, and other environmental factors including the number and types of competing advertisements. Any one of these factors can help shape the behavioral response to a campaign. An additional consideration is the complexity of the advertisement message. Since any one advertisement probably contains a complex mix of emotional and contextual elements, some positive and some negative, their seamless integration may ultimately create the most novel and memorable advertisement.

Approximately 21% of adults in the U.S. are current cigarette smokers [74], and roughly 70% of them want to quit [75]. Many have tried to quit; in 2006 alone, 39.8% of smokers quit for at least one day [74]. But many have not succeeded and try again and again. Others may not have ever tried at all. Similar to any other population group, smokers are heterogeneous in their demographic and health profiles, knowledge of smoking hazards, support systems, intentions, motivation and desire to quit. Until more evidence accumulates to the contrary, the most promising way to reach, engage and promote behavior change in such a diverse and complex population is to develop a creative, multilayered and dynamic set of messages. This includes fear appeals, but certainly isn't limited to it.

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*Chapter 4*

# THE POLITICAL USE OF FEAR AND NEWS REPORTING IN ITALY: THE CASE OF BERLUSCONI'S MEDIA CONTROL

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## Abstract

This chapter explores the relationship between fear of crime and political dynamics in Italy. Of particular relevance is the fact that Italian Prime Minister Silvio Berlusconi is the richest person in Italy, controlling a large share of the mass media industry. Berlusconi uses his media influence to cultivate the public's fear of crime, for his own political gain. The chapter explores the social science literature concerning public issues, media coverage, and public fear. The Italian media landscape is described, including Berlusconi's direct or indirect control of various media. The main thrust of the chapter explores the aspects of Berlusconi's manipulation of crime coverage in media, which manipulates the public's fear of crime, which in turn may be associated with voting behaviours. Concluding reflections explore the complexities of the model of media

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manipulation presented and the importance of the Italian case in a global climate of continuing capital accumulation in media industries.

**Keywords**: fear of crime, Silvio Berlusconi, media in Italy, media control.

# Introduction

This chapter explores the relationship between fear of crime and related news reporting in Italy. The public perception of crime in Italy has fluctuated in relation to changes in national government, and segments of the contemporary government in Italy have used fear of crime as a political tool. Via statistics related to Italian news media and public opinion, this chapter investigates the correlation between Italian Prime Minister Berlusconi's media control and the Italian public's fear of crime. Examination of these dynamics reveals that the public's perception of the crime problem corresponds closely to the intensity of news media coverage of crime, which in turn corresponds to changes in national government. In typical studies of crime and media, scholars have observed a positive relationship between the amounts of time people spend watching TV and their tendency to fear crime victimization. Thus, this relationship is not novel, but what is special about the present case is the degree of control achieved by Berlusconi over the mass media industry in Italy.

The selection of Italy as a focus of this study is related to its idiosyncratic structure of mass media ownership. Italian Prime Minister Berlusconi is the richest man in the country who also owns a large media empire, and in recent elections analysts have identified a positive relationship between TV consumption and voting for Berlusconi. More, public opinion polls demonstrate that the perception of fear about crime increases when Berlusconi is in the opposition party, and decreases when Berlusconi is prime minister. As the reader shall see, this fluctuation also corresponds to the intensity of crime coverage in Berlusconi-controlled media outlets. Ironically, these fluctuations in fear of crime have occurred while official records indicate general decreases in the crime rates. Although the relationship between the objective crime problem and fear of crime is contraindicated, there is an association between Berlusconi's efforts to gain (or maintain) control in the national government and the Italian public's concern about crime as a social issue.

The facts cited below show a relationship between perception of fear and the frequency of news reportage of crime. Indeed, such an empirical association could be observed in almost any nation, but this chapter examines the particularities of

the Italian case of Berlusconi and his media empire. Specifically, the frequency of news reports about crime and violence increase when Berlusconi is in the opposition to the national government, and thus trying to undermine the legitimacy of the standing prime minister. Conversely, the frequency of crime reportage decreases when Berlusconi is the prime minister, and thus trying to maintain his legitimacy. This chapter demonstrates that the perception of fear of crime in Italian public opinion is related to the mass media coverage of crime and, above all, how the mass media coverage of crime is related to the political position of Berlusconi. Thus, the chapter argues that Berlusconi has successfully used his media empire to influence media agenda setting, and consequently to influence public sentiment. More specifically, Berlusconi uses his media empire to influence the public's fear of crime victimization, creating alarmism when he in the opposition, or, in contrast, reducing fear of crime when he is leading Italy. This chapter's basic thesis is as follows: For his own political gain, Berlusconi uses his media control to influence the perception of crime as a social problem. To prove this assertion, the chapter is divided into three sections: first, overview of the literature news reporting of public issues; second, a discussion of Berlusconi's media empire, including an exploration of the relationship between media consumption patterns and support, or opposition, to Berlusconi; and third, a clarification of the fluctuation of crime reporting and its relationship to changes in public opinion and Italian government. The chapter concludes with reflections about what the Italian case can reveal about wider concerns, including media dynamics related to coverage of crime and the centralization of mass media industries in liberal democracies.

## Public Issues, Media, and Fear

The social sciences have a long tradition of studying the social effects of, or on, public sentiment about risks to individual or social welfare. To place this chapter's focus in its proper context, this section surveys the social science research in moral panics, media coverage of crime, and public fear. The earliest social scientists to examine the issues of public panic over threats to safety were MacKay (1980 [1841]) and Le Bon (1979a [1895]), both of whom studied crowd and mob behaviors. In the mid-twentieth century, as social science began its constructionist turn, Becker (1963) identified the social category of *moral entrepreneurs*: those who engaged in efforts to sway public opinion on moral issues. In the decade or so thereafter, the field of moral panics emerged (see e.g.,

Cohen, 1972; Hall et al., 1978) as a way of describing the public outcry concerning the actions of groups whose behaviors threaten the social fiber.

More recently, social scientists (e.g., Beck, 1992 & 1999; Ungar 2001) have begun to describe the contemporary social scene as one characterized by risks of various kinds, including crime victimization, epidemics of illness, economic crises, transportation accidents, and industrial or natural disasters. Such risks can, at times, generate intense social anxiety and fear, as described by Altheide (2002), Furedi (2005), and Ungar (2001), and such effervescent feelings are often accompanied by public calls to maintain disasters and accidents within "normal" parameters (Perrow, 1984). Similarly, the public calls upon the state to control risks from associated with violence and crime. Unfortunately, the public's fears are often misplaced, as sociologist Barry Glassner (1999) has said that people often fear the wrong things. However, what if people are manipulated into fearing the wrong things?

According to the sociologist Norbert Elias (1978 [1939]), the state has the legitimate monopoly on the use of force within its borders, so that threats to the state's control of force might be construed as threats to the existing social order. This chapter argues that Italian Prime Minister Berlusconi uses his media influence to drive fear of crime for his own political ends. The mechanism by which this operates is a rhetorical device that plays upon the public's assumption that the state has a monopoly on the use of violence, and by virtue of this, the supposition that the state is solely responsible for security. By creating the perception that the opposition allows crime to run rampant, thereby losing their control of violence, Berlusconi undermines the legitimacy of his opposition. When he is in control of the national government, Berlusconi creates greater legitimacy for his own policies through cultivating the perception that he has greater control over crime.

This dynamic is possible via Berlusconi's media control in Italy, which manipulates the well-documented axiom in communication studies that public fear of crime is directly related to the intensity of media coverage of crime. For an adept review of the connections between mass media and fear of crime, see Heath & Gilbert (1996). Generally known as the cultivation hypothesis, research indicates that exposure to TV violence, both entertainment and news reports, has an effect on some viewers in increasing fear of crime (Heath & Gilbert, 1996, p. 380). Scholars have also noted that much of the media's coverage of crime does not accurately reflect the verifiable reality of crime as a social issue. For example, the media disproportionately focuses on horrific events, which leads to a distortion of the public opinion about crime (Roberts & Doob, 1990). These dynamics are observed in contexts where the media are characterized as

independent. However, this chapter examines a new case where one politician and his organizations maintain control over the lion's share of media in a nation. Before proceeding with the discussion, it is necessary to describe the media field in Italy.

## The Italian Anomaly

The landscape of mass media in Italy is idiosyncratic in that it is more centralized than in any other liberal, democratic society. This section describes the situation of Italian media, including its ownership and consumption. What makes the Italian media peculiar is that the richest person in the country, Silvio Berlusconi, directly or indirectly controls approximately 90 percent of Italian national TV, two national newspapers, some of the larger-circulation national news magazines, the copyrights on a quarter of all Italian books, the main distribution networks for most of Italy's magazines and movies, and around 60 percent of all TV advertising sales. Such centralization of control in the Italian media industry indicates that Berlusconi and his organizations exert extraordinary leverage on the production of knowledge and information in Italy. Beyond his control in the mass media sector, Berlusconi also maintains economic operations in many other sectors, including sports, banking, insurance, and construction. This centralization of economic control in the hands of a singe individual is what motivated the organization Freedom House to label Italy as a "partly free country" and earn the country the 73rd position on the Global Press Freedom Rankings (Freedom of Press, 2009). Indeed, Italy has one of the lowest levels of press freedom in Europe and, along with Turkey, is one of only two countries in Europe classified as "partly free." Similarly, the organization Reporters without Borders [RSF] ranks Italy among the worst of all Western countries in terms of press freedom, a position that was achieved very recently. In 2007, with a centre-left government, Italy was at the 35th position (RSF, 2007); in the 2008, the year in which Berlusconi won the election for the third time, the country was at the 44th (RSF, 2008); and by 2009, Italy was in the 49th position for freedom of the press (RSF, 2009).

Berlusconi's quasi-monopolistic control of media is most evident in TV, where 90 percent of TV broadcasts offer him support. This is achieved not only through generating favourable news while censoring inconvenient news, but also by creating the cultural background for legitimating the status quo. In Italy, TV has the clear effect as a tool of political information of influencing political decisions. Indeed, as the "43rd Report on the Social Situation in Italy" published

by Censis (2009) shows, during election times 69.3 percent of Italians receive their news from TV. In contrast to the influence of TV, only 25.4 percent of Italians derive their political information from reading a newspaper. Perhaps more interestingly, TV is the most important source of information for Italians, in deciding how they will vote (Censis, 2009). For certain groups this tendency is more pronounced, as TV is the primary source of information for 76 percent of those with low levels of education, for 74.1 percent of housewives, 78.7 percent of pensioners, and for 81.8 percent of the elderly (Censis, 2009). These facts are relevant, considering that in the weeks prior to an election only 27 percent of Italian citizens report that they know how they will vote. The remaining 73 percent decide at election time, a decision that may be strongly influenced by TV viewing (Censis, 2009), which is strongly controlled by Berlusconi. This means that TV has a strong influence on the voting behaviours of Italian citizens, and that control of TV in Italy is an important tool for obtaining and maintaining political power. Berlusconi, with his private media empire and his political influence on public TV, can easily influence the agenda in political campaigns, manipulating public opinion. In fact, those who consume more TV are also more likely to vote for Berlusconi; especially those who watch more than 4 hours of TV per day (Demos & Pi, 2009).

What makes the Italian case even more interesting is that, compared with many other countries, in Italy there is a noted contrast among the political choices available to voters, and voters vary widely in their opinions about media information. For example, less than one person in ten radical left voters believes that TV is the most independent medium. In contrast, more then one person in three who votes for Berlusconi believes TV is an independent medium. Indeed, for 34.3 percent of Berlusconi supporters, TV is the most independent source of information, while 29.5 percent cite the Internet as the most independent medium. By contrast, 69.8 percent of radical left voters think that the Internet is the most independent source of news, while only 8.4 percent report the belief that TV is most independent (Demos & Pi, 2009). These details are further complicated by the fact that 26.4 percent of the Italian population use TV alone as a medium for accessing information about current events. This number increases with age, arriving at 42.1 percent of those 65 years and older. Thus, more that one quarter of people, including four in ten elders, knows about political events solely via TV consumption. Given these statistics, one can see how controlling TV broadcasts can give a politician incredible power to influence public opinion. The following sections explore this dynamic in relation to manipulation of fear for political ends.

## Fear of Crime as a Political Tool in Italy

Give the structure of media ownership and the noted influence of TV viewing on voting behaviours, it is clear that Berlusconi is in a position to maintain political control via his media influence. However, the question remains: how exactly is this accomplished? This section examines Berlusconi's use of crime reporting as a political tool. The right to be safe in one's home or while walking on the street is seen as a universal right. In the last decades, all around the world, various electoral campaigns have elevated the crime issue to the top of the political agenda. In Italy during the last five electoral competitions (i.e., the elections of 1994, 1996, 2001, 2006, and 2008), Berlusconi spent a great deal of this media time talking about the crime problem, and his promises to maintain public safety. Indeed, the polls indicated that the general public feels safer when Berlusconi is leading the country than when he is at the opposition (Diamanti, 2008). However, an examination of data about crime trends in Italy reveals that the public's perception of security is not consistent with the verified rates of crime and violence in the country, nor is fear of crime consistent with government campaigns against criminality. Instead, public fear of crime appears more closely associated with the intensity of crime coverage in the media, particularly TV. Thus, the increased security when Berlusconi is leading the country is not linked with verified changes in crime rates and policies, but instead it is linked changing perceptions of the crime problem related to variations in media coverage of crime. By varying the media coverage of crime, Berlusconi manages the public perception of the crime problem.

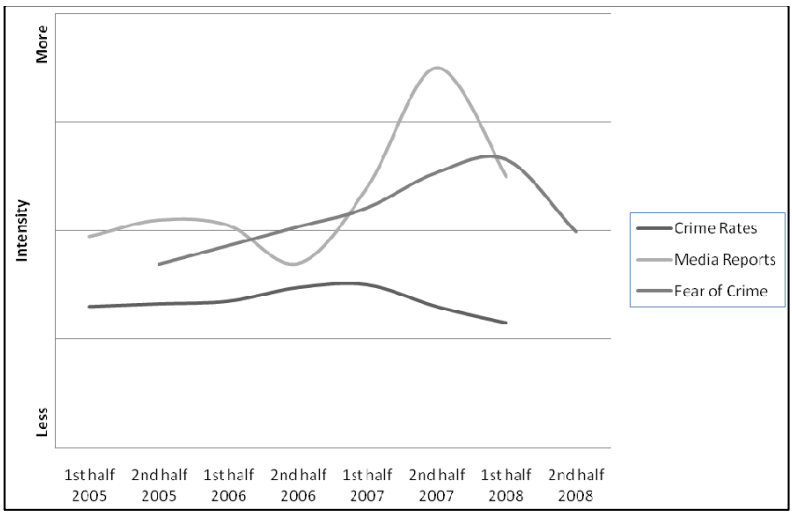
This section concentrates on the period from 2006 to 2008, when Berlusconi most intensely used his news media to influence the perception of fear and consequently to increase support for his policies. During this period, public opinion changed rapidly, and violence was often an important issue both in news coverage and public opinion. A brief summary of the political and cultural situation in Italian will help to contextualize the events of this period. In May 2006, the centre-left coalition led by Romano Prodi, won the Italian election, with a large but weak coalition, resulting in an unstable administration. Shortly after this election, the problem of crime and violence ascended the media agenda, and public opinion drove calls for government responses to the crime threat. The alarmist media campaign, primarily orchestrated by Berlusconi's private TV networks, brought the topic of violence onto the political and public agendas. In 2007, just one year after Prodi's election, poll data showed that 92 percent of Italians felt afraid - 45 percent were "very afraid" and 47 percent were "somewhat afraid (Demos & Pi, 2007). One year later, and after only two years in control, the centre-left coalition broke down,

challenging the legitimacy of the standing government. At the consequent political election of April 2008, Berlusconi won for the third time. In that election campaign a poll showed that 21 percent of voters felt that the most important issue and priority for the new government was to fight crime (Diamanti, 2009). Just one year after Berlusconi reassumed the position of Prime Minister, subsequent polls demonstrated that a mere 12 percent of people though that fight crime was the most pressing public issue (Diamanti, 2009).

In one year, public opinion about crime wavered drastically, but the question is what caused this fluctuation? This chapter advances the thesis that the mass media has influenced the perception of fear of crime, and that the political use of fear to influence the election campaign operated through its manipulation of public opinion. Although one might suggest that other variables and dynamics could influence the change of agenda setting; for example, because another pressing issue ascends the public agenda, or due to the usual issue-attention cycle (Downs, 1972). However, the dynamic of elevating issues for political gain is typical of Italy and must be understood in light of the other facts mentioned. Namely, that TV news regarding crimes suddenly decreased when Berlusconi, who directly or indirectly controls 90 percent of Italian TV, won the election of 2008, although crime rates did not change. Indeed, the case presented here is a clear example of the actuality of agenda setting (McCombs & Shaw, 1972), which suggests that journalists, or in this case, those who control media, exert a massive influence on audiences and public opinion, through their choice of what stories to cover, and how prominently to cover them. In line with the agenda setting approach, the news media in Italy have the ability to transfer issues from their own agendas to the public agenda. Alternately, the news mass media can remove issues from the public agenda, simply by removing them from the media. The same goes for those who control the media, in this case TV in particular.

Some facts help to illustrate the point: In the second semester of 2007, when the centre-left coalition was governing and Berlusconi was in the opposition, TG5 (the second largest TV station, by audience, which is also owned by Berlusconi) reported 900 articles about crime (Nizzoli, 2009). In contrast, in the first semester of 2009, when Berlusconi was the prime minister, the number of reports discussing crime was 400 (Nizzoli, 2009), as illustrated in Figure 1. Notably, this figure demonstrates that news reportage of crime increased suddenly in the second semester of 2006, soon after Prodi won the election in Italy. More, there is a direct correlation between the intensity of news coverage of crime and the perception of the crime problem. It is evident that when the number of crime reports on TV increased, the public's perception of crime as a problem also increased, and vice versa. Although this direct correlation between intensity of news coverage of

crime and fear of crime might be quite commonly observed, in most democratic countries (especially those with independent media), the news media tend to balance their coverage. In the absence of an empowered and independent media, we may observe that the media becomes a tool for suddenly changing the news agenda, which has the direct influence of influencing the most pressing items of public concern.



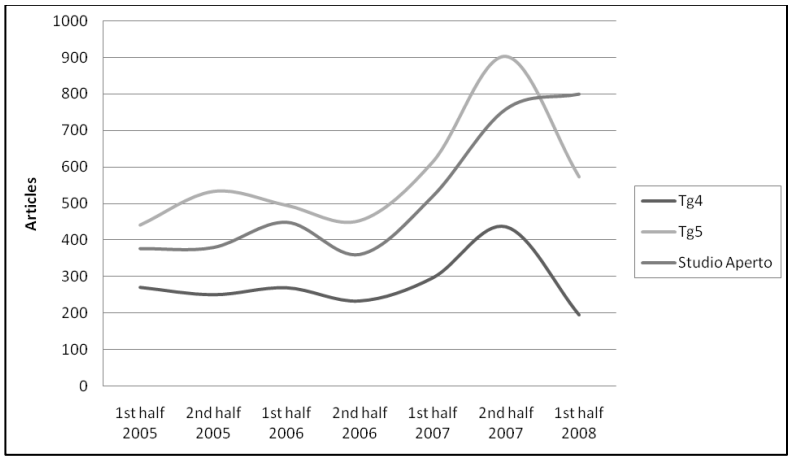

**Source of data**: Diamanti, 2008

**Note**: trend lines are drawn using different metrics, then overlaid to demonstrate the point visually. Fear of crime is estimated between 2nd half of 2005 and 1st half of 2007, and represented as a trend line.

Figure 1. New Reports, Rates, and Fear of Crime, by Semester 2005-2008.

Italy's idiosyncratic characteristic is the media monopoly of Berlusconi, meaning that a politician can suddenly change the agenda of media and consequently influence the public's perception of social issues. As a more concrete example, Berlusconi was successful in reducing the public's perception of the crime problem by decreasing the intensity of media coverage of crime. What is most interesting is that the trend lines suggest that this relationship has little bearing on crime trends, as represented by crime statistics. Crime reportage suddenly decreased during the first semester of 2008 soon after Berlusconi won the election. This reduction was followed in the next semester by a consequent decrease in fear of crime (Nizzoli, 2009). Simultaneously, the number of crimes decreased by eight percent, but on TV (not only Berlusconi-owned TV, but also public TV whose management is selected by the prime minister) the intensity of

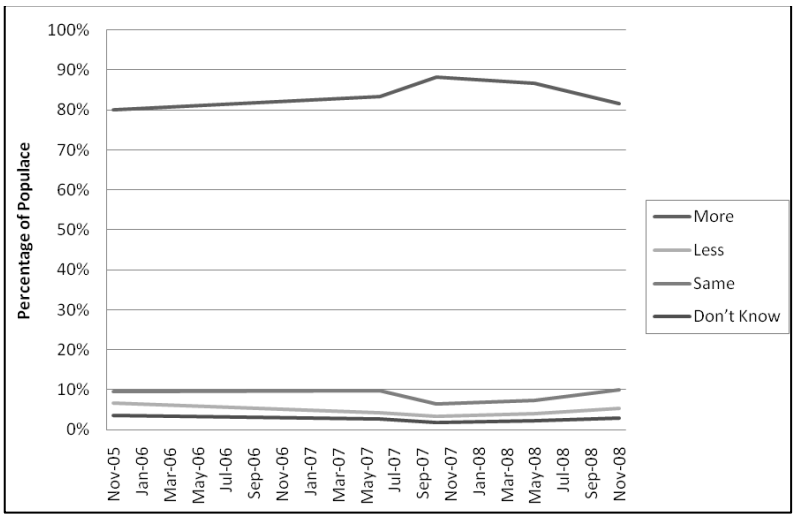
reports discussing crime decreased by 50 percent (Nizzoli, 2009). Such rapid fluctuations are graphically illustrated in Figure 2.




**Source of data**: Nizzoli, 2009

**Note**: These three TV stations are privately controlled by Berlusconi's organization.

Figure 2. Semi-Annual News Reports about Crime, by Network.




**Sources of data**: Demos & Pi, 2008; Diamanti, 2008.

**Note**: Respondents answered the following poll question: "According to you, is there more or less criminality in Italy in the last five years?"

Figure 3. Italian's Perception of Criminality.

There are two important points to be derived from these findings. First, the Italian case suggests that there is little or no relationship between reductions in crime rates and reductions in fear of crime. Fear of crime appears to be more a function of news programming about crime than it is about verifiable rends related to crimes. In a country such as Italy, which is described as having a semi-free media, controlling the media provides the ability to manipulate the intensity of news coverage of public issues, and therefore to manage the public's putative sense of social problems. This manipulation can clearly be used for purposes of political gain. Second, and perhaps more importantly, public fear of crime in Italy has been manipulated for political purposes. In this case, the consequences are that people felt more secure when Berlusconi was in control of the government, than when the opposition was in control. The public feels safer when Berlusconi is prime minister not because his policies are effective in reducing crime rates (these have remained relatively stable, or even increased in some years of Berlusconi's tenure), but because the public has the impression that he effectively solves the problem of crime.

At root, Berlusconi is at work in *manufacturing consent* (Herman & Chomsky, 2002) for his policies, a process that involves manipulating public fear. However, is it really possible to argue that the perception of crime is managed by the media, and so directly by a single man, Berlusconi? The following example seems to confirm this strong and provocative assertion. In October 2007, when the centre left coalition was leading the country, public polls indicated that 88 percent of Italians believed criminality had increased, while in November of 2008, six months after Berlusconi won the election, only 82 percent believed that crime had increased. These poll data are illustrated in Figure 3. While these fluctuations may seem miniscule, in voting behaviour, such fluctuations in public opinion can make a marked difference in election outcomes.

According to these poll statistics, we observe that the percentage of people believing that crime is escalating increases when Berlusconi is in the opposition and decreases when he is in power. More, these fluctuations seem to occur rapidly, often in a period of six months. Certain segments of the population are more strongly affected. For example, women, southern Italians, those with fewer years of schooling, and those who watch four or more hours of TV per day are, on average, much more likely to fear such risks as physical violence and economic distress. More, these groups are also more likely to have generalized anxieties, including global fear (i.e., fear of everything) and even undefined, non-specific fears (Diamanti, 2008). This dynamic may be related to the fact that time spent watching TV is positively related to feeling insecure. Earlier, we noted that those who watch more TV are more likely to support Berlusconi and his political

coalition. To this finding we can make the indirect inference that those who support Berlusconi are more likely to feel unsafe. In general, these three tendencies in Italy appear to be related.

## Conclusion

In the Italian context, such a discussion of political manipulation of media is certainly not new, although it remains controversial. This chapter was written to bring an awareness of the Italian media landscape to a wider audience, and at this point, the concluding reflections explore broader issues related to the Italian case of Silvio Berlusconi, and his political manipulation of public sentiment. These remarks touch upon two areas. First, it is possible to say that those who have power to manipulate media also have the power to manipulate the public's perception of social problems such as crime. A relation between media coverage of crime and the public's fear of crime indeed seems to exist almost everywhere, but perhaps Italy is the only place in the world where it is possible to demonstrate such a direct connection among media attention to crime, the public's fear of crime, and voting behaviours. Further, the Italian case indicates that changes in these dynamics are related to changes in the national government. While this chapter has presented a somewhat simplified explanation of Berlusconi's manipulation of crime in media, the situation is of course more complex.

The reader is cautioned to understand this process as a dynamic and multifaceted phenomenon, and not as the rather simplified notion of media manipulation presented here. Indeed a number of factors complicate things. For example, other media also exist (e.g., newspapers, radio, and Internet), some of which are not controlled by Berlusconi and his organizations. Ironically, the dominance of crime in the Italian media might contribute to declining civic engagement. If citizens are afraid in their communities, and if they are hesitant to interact with their neighbours, then they might tend to close themselves off socially. Ultimately, such increasing social anxiety and the resultant isolation might contribute to the degradation of social networks at community levels. Indeed, it is possible to postulate that those who watch more TV are exactly those who are least participatory in civic organizations. Ironically those who watch more TV tend to feel the least secure, which might lead to increased time indoors. Some of this time might be spent watching more TV, thereby exacerbating the problem.

Second, this chapter helps clarify the manipulation of fear of crime (and potentially a myriad of other problems) as an aspect of the political process. As

noted in an earlier section, sociologists have already noted the tendency to use fear as a political tool. For example, Hall et al. (1978) noted the tendency for elites to fabricate social issues, such as crime, for political gain. The British tradition of cultural studies has often focused on the role of elite-driven fears as elements of moral panics. On the other hand, other scholars (e.g., Goode & Ben-Yehuda, 1994) have also noted that the effectiveness of such panics also relies on its need to resonate at the grass-roots level. Certainly, this must often hold true, however in the case of Italy, we see an unprecedented centralization of media capital, compared with any other western liberal society.

The case of Italy appears as an important one for the rest of the world, given that the global accumulation of capital in many industries (including the media) is becoming more the rule than the exception. Therefore, the type of media manipulation identified under Berlusconi naturally raises the question of what is to be done to counteract the process of political media manipulation. Such a discussion is beyond the scope of this chapter, whose aim has been to identify and describe the situation in Italy. Media regulation will undoubtedly not come from within Italy, given Berlusconi's combined political and economic power. Pressure for media reform in Italy will undoubtedly rely on external pressure, and therefore it is the aim of this chapter to bring the discussion of Italy's situation to a wider audience, with the hope that this chapter will contribute to a broader discussion of consolidation of media capital in Italy and worldwide.

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*Chapter 5*

# THE PORTRAYAL OF RISKY DRIVING IN POPULAR ACTION MOVIES

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## Abstract

Traffic crashes are an important cause of injury and death among young people. It has been argued that there may be an association between media depictions of risky driving and adolescents' driving behaviour. However, the actual depiction of driving on television has remained largely unexamined. In the current study, content analysis was used to examine the prevalence of risky driving in a sample of 26 popular action movies. The data showed that risky driving is very common, but that its consequences are rarely portrayed. Risky drivers appeared to be mostly young males, were lead characters and often the hero. Very often no seat belt wearing was shown. Since media effects theories suggest that these portrayals may influence viewers' norms and risk perceptions, these results have important implications for prevention.

**Key Words**: risky driving, action movies, portrayal, traffic, media.

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# Introduction

Traffic crashes kill 3242 people each day and injure or disable between 20 million and 50 million people a year (WHO, 2004). It is therefore important to study all possible causes of dangerous driving. Research has shown that adolescents spend a lot of time watching action movies on television (Eggermont, 2006). Several authors have expressed concern regarding the way in which driving is portrayed on television (Arnett, Irwin & Halpern-Felsher, 2002; Harré, 2000; Reinhardt-Rutland, 2007). The potential impact of such portrayals, however, remains largely unexamined.

In one of the few studies on this topic, Greenberg and Atkin found that risky driving is prevalent on prime time television and that the risks associated with this behaviour (such as death, injuries physical damage) were hardly ever shown, neither was such behaviour punished (e.g. with an arrest or a fine) (Greenberg & Atkin, 1983). Drivers were predominantly young males. Seat belt use was only shown in one percent of the risky driving instances. About 15 years later Greenberg & Gregg (1998) found that seat belt use had increased substantially to 24% of the television drivers. Women were depicted as wearing safety belts more often than men, and older people more often than younger people. Other studies on the portrayal of risk taking on prime time television (Will, Porter, Geller & DePasquale, 2005), in children's programs (Glik et al., 2005; Winston, Woolf, Jordan & Bhatia, 2000), movies (Greenberg & Thanki, 1997; Jacobson, Kreuter, Luke & Caburnay, 2001), and reality television (Cowan, Jones & Ho, 2006) showed that although risk taking was frequently depicted, the harmful or beneficial consequences of this behaviour were only seldom shown and preventive practices such as seat belt wearing were hardly ever portrayed. Several authors have argued that such depictions may distort viewers' perceptions (Cowan et al., 2006; Potts, Doppler & Hernandez, 1994).

With the exception of Greenberg and Atkin's (1983) study, the aforementioned studies focused on general risk-taking or seat belt wearing and did not analyze the actual portrayal of driving. The current study therefore aimed to examine the depiction of risky driving in action movies. The study assessed four aspects of the portrayal of risky driving in action movies: (1) the way in which driving is portrayed, (2) whether the risks associated with risky driving were depicted, (3) driver characteristics and (4) the frequency of seat belt wearing.

**Table 1. Movies in the sample**

| year | Ranking top 100 | Title | origin |
|---|---|---|---|
| 2005 | 5 | War of the worlds | VS |
| 2005 | 6 | Mr. & Mrs. Smith | VS |
| 2005 | 20 | The island | VS |
| 2005 | 25 | Batman Begins | VS |
| 2005 | 30 | National Treasure | VS |
| 2005 | 32 | Constantine | VS |
| 2005 | 37 | Sin City | VS |
| 2005 | 41 | Fantastic Four | VS |
| 2005 | 47 | A history of violence | VS |
| 2005 | 53 | The pacifier | VS |
| 2005 | 56 | Hostage | VS |
| 2005 | 64 | The transporter 2 | F/VS |
| 2005 | 82 | Sahara | VS |
| 2005 | 96 | The empire of the wolves | Fr |
| 2006 | 5 | Casino Royale | VS/GB |
| 2006 | 12 | X-men 3 | VS |
| 2006 | 14 | Mission Impossible 3 | VS |
| 2006 | 17 | Miami Vice | VS |
| 2006 | 35 | Superman Returns | VS |
| 2006 | 37 | V for Vendetta | VS |
| 2006 | 39 | Big Momma's House 2 | VS |
| 2006 | 40 | Lord of War | VS |
| 2006 | 56 | The sentinel | VS |
| 2006 | 66 | Jarhead | VS |
| 2006 | 70 | Déjà vu | VS |
| 2006 | 80 | The fast and the furious: Tokyo drift | VS |

# Method

## Sample and Coding

We selected all movies with the highest annual Belgian box office gross for 2005-06 categorised in the Internet Movie Database (http://www.imdb.com) as action movies. Excluded were movies centred on airplanes, boats or trains, in which no moving cars were shown, depicting events set more than 50 years ago (pre-1945) and animated movies. All driving scenes in the 26 action movies (table 1) thus selected were coded. A driving scene was defined as a scene in which a

driving vehicle was depicted for at least five seconds. The beginning of the scene was the appearance of the moving vehicle on the screen, the end of the scene was the end of the driving action. Interruptions in a scene because the camera cut back and forth between the characters in the car were defined as part of the driving scene. Thus, the narrative and action form a coherent whole (cf. also Greenberg & Atkin, 1983; Pelletier et al., 2000; Will et al., 2005).

One coder judged all the movies and driving scenes in the sample. Five movies were randomly selected and independently coded by a second coder. These represented 22% of all driving scenes. Intercoder reliability was assessed with Krippendorf's Alpha and was larger than .80 for each variable.

## Variables Coded

The coding instrument was based on Greenberg & Atkin's coding scheme and consisted of close-ended questions (Greenberg & Atkin, 1983).

For each driving scene duration was noted. The presence of several forms of risky driving was coded (yes/no): (1) quick braking/sudden decrease in speed, (2) quick acceleration, (3) tires screeching, (4) brakes squealing, (5) weaving (erratic movement through traffic from lane to lane), (6) "autobatics" (stunt driving in which vehicles flip, spin or leap in a dramatic fashion), (7) leaving the ground (vehicle loses contact with pavement), (8) leaving the road, (9) aggressive driving, (10) speeding, (11) irregular overtaking, (12) insufficient distance between two vehicles, (13) fun riding/joy riding (taking risks in order to make driving more fun), (14) jumping the traffic lights, (15) neglecting stop signs, (16) driving without lights at night. Risky driving was seen as present if at least one of these risky driving acts was shown.

Consequences of endangering acts. It was coded (yes/no) whether (1) a crash was shown; (2) goods such as vehicles or surroundings were damaged, or whether (3) legal penalties were issued. The number of dead or injured persons were coded as well as several characteristics of the drivers: gender, whether this character had a lead role (yes/no), was a "hero" (yes/no), antagonist (yes/no) or whether s/he was driving riskily according to the interpretation of the coder (yes/no).

Seat belt use was coded as (1) indiscernible, (2) obvious wearing by at least one character or (3) obvious non-use.

## Analyses

All statistical procedures were conducted using the Statistical Package for the Social Sciences (SPSS, version 14.0).

# Results

287 driving scenes occurred in the sample of 26 action movies. On average 11 driving scenes with a mean duration of 43.71 seconds were coded per movie (SD=55.41). This means that driving vehicles were shown on average for eight minutes per movie.

**Table 2. Frequency of different risky driving acts**

| Risky driving acts | Frequency | Percentage1 * (N=624) | Percentage 2† (N=287) |
|---|---|---|---|
| 1. Speeding | 99 | 15.9 | 34.5 |
| 2. Tires screeching | 72 | 11.5 | 25.1 |
| 3. Brakes squealing | 71 | 11.4 | 24.7 |
| 4. Quick braking/sudden decrease in speed | 67 | 10.7 | 23.3 |
| 5. Quick acceleration | 59 | 9.5 | 10.6 |
| 6. Autobatics | 44 | 7.1 | 15.3 |
| 7. Weaving | 39 | 6.3 | 13.6 |
| 8. Others forms of risky driving | 36 | 5.8 | 12.5 |
| 9. Aggressive driving | 34 | 5.5 | 11.8 |
| 10. Leaving ground | 27 | 4.3 | 9.4 |
| 11. Leaving road | 25 | 4.0 | 8.7 |
| 12. Insufficient distance | 19 | 3.0 | 6.6 |
| 13. Irregular overtaking | 16 | 2.6 | 5.6 |
| 14. Joyriding | 13 | 2.1 | 4.5 |
| 15. Jump the traffic lights | 2 | 0.3 | 0.7 |
| 16. Neglect stop sign | 1 | 0.2 | 0.3 |
| 17. Driving without lights at night | 0 | 0 | 0 |
| Total amount of risky driving acts | 624 | 100% | |

*percentage 1= Frequency of different risky driving acts as a percentage of the total amount of risky driving acts (N=624)

†percentage 2= Frequency of different risky driving acts as a percentage of the total amount of driving scenes (N=287)

## Prevalence of Risky Driving

Risky driving occurred in 129 scenes (44.9%) with a mean scene duration of 61 seconds (SD=71.53). In total 624 risky driving sequences were observed, an average of 24 per movie. The number of risky driving incidences in a scene correlated positively with the duration of the scene (Pearson r= .51, p<.001).

Table 2 gives an overview of the frequency of different risky driving behaviours. Speeding, driving or breaking with screeching tires, quick breaking or sudden decreases in speed were the risky driving acts most frequently encountered.

## Risks Associated with Risky Driving

Potential dangers of risky driving were depicted only seldom. Only 31.8% of the risky driving acts were followed by a crash and in only 27.9% of the endangering acts vehicles or surroundings were damaged. Physical damage is only seldom shown in action movies. In our total sample only two characters died en four persons were injured as a result of a crash. Other, less severe, consequences remained unmentioned. On a total of 129 risky driving scenes no legal penalties were imposed.

## Driver Characteristics

Characteristics were coded for 372 drivers. In 22.3% of the cases gender of the driver could not be identified. The remaining drivers were predominantly male (86.8%). When only scenes with risky driving were considered the situation was slightly different. 47.6% of the male drivers were driving riskily versus 65.8% of the women ($X^2$=4.365, df=1, p<.05).

Action movie drivers appeared to be mainly in their twenties (28.1%), thirties (34.7%) or between 40 and 49 years old (27.7%). A t-test for independent samples showed that risky drivers were significantly younger (M=2.92, SD=.87).

Characters with a lead role engaged more frequently in risky driving than those in supporting roles (56.8% v 35.4%, $X^2$=16.878, df=1, p<.001). Protagonists drove riskily more often than non-hero's (54.5% v 40.2%, $X^2$=6.484, df=1, p<.05).

### Seat Belt Wearing

In 44.6% of the driving scenes it was unclear whether drivers and/or passengers wore seat belts. Seat belts were used by at least one car occupant in 21.6% of the driving scenes. In 33.8% no seat belt wearing was shown.

## Conclusion

Risky driving occurred very often in action movies. Speeding (in 34.5% of driving scenes), driving (25.1%) or breaking (24.7%) with screeching tires, quick breaking or sudden decreases in speed (23.3%) were the risky driving acts most frequently encountered. Only 31.8% of the risky driving acts were followed by a crash and in only 27.9% of the endangering acts vehicles or surroundings were damaged. In our total sample only two characters died and four persons were injured as a result of a crash. Thus, the results of this study showed that risky driving is very common in action movies but that the risks associated with it are rarely portrayed. Risky drivers appeared to be mostly young males, were lead characters and often the hero.

From a prevention point of view these results have important implications. Media effects theories suggest that frequent portrayals might influence viewers' perceptions of how "normal" such behaviours are and what the associated risks might be (Cowan et al., 2006; Potts et al., 1994; Escobar-Chaves et al., 2006). Showing heroes as risky drivers might provide attractive role models. Not showing the negative consequences of behaviours increases learning. Will et al. (2005) have argued that if fictional characters would systematically wear seat belts, this behaviour would be perceived as being the norm and might thus influence non-users. It is important that future programs that are trying to modify risky driving behaviours are aware of media portrayals of driving and their possible influences on novice drivers. Furthermore the findings of this study may encourage researchers to examine media use as one of the predictors of risky driving.

This study had a number of limitations. The sample was limited to action movies. Even though studies on seat belt wearing (e.g. Greenberg & Gregg, 1983; Will et al., 2005) found similar percentages of seat belt use on television and the data on risky driving were similar to what Greenberg & Atkin (1983) found on this topic more than 20 years ago, we do not know to what extent the results can be extrapolated to television fiction. Second, the data in our sample were limited to movies from 2005 and 2006. The study period was too short to assess trends in

the depiction of television driving over time. Further research is necessary in order to assess the generalizability of the results.

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*Chapter 6*

# DYADIC AND SOCIAL INFLUENCE ON THE AXELROD MODEL WITH CLEVER MASS MEDIA

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**Abstract**

The Axelrod model has been proven to be a fruitful model to study different social phenomena related to the dissemination of cultures. In recent years, it has been widely studied and several settings have been implemented to understand different social situations. Particularly, attention has been dedicated to the case where an external field is present, in order to characterize the competition between agent-agent interactions and the agents' interaction with the external field influencing all of them. Here, we review some fundamental aspects of the Axelrod model. To situate the reader in the context of this review, we first discuss several modifications of the original model. Afterwards, a new way to include an external

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vector field is studied. The vector field acts over the whole system and remains fixed on time. It has a non null overlap with each agent in the society. We explore the influence of this external agent under different model formulations and analyze the system's behavior when dyadic interaction between agents is changed to *social influence*, as has been recently suggested. Furthermore, we discuss in depth how the results obtained depend on different parameters such as the initial social diversity, the size of the network, the strength of the external agent (here associated to Mass Media), different levels of noise, etc. Our conclusions both summarize what we discuss and points to future challenges.

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**Keywords:** Dynamics of social systems, cultural diversity, computational modelling, social influence, structure and organization in complex systems

# 1. Introduction

Economical and social systems have become target systems of nowadays interest. Nevertheless, the elementary components of these systems are much more complex than atoms and molecules. Social systems are composed by agents whose interactions at lower level yield to the spontaneous emergence of higher-level organizations whose properties are not due to the behavior of the single entities but rather to nontrivial collective effects resulting from the interactions of a large number of them.

Some social science research use simplified verbal representations of the social phenomena. In such cases it is difficult to precisely determine the implications of the ideas being put forward [1]. The other approach adopted is the well-known representation in terms of statistical or mathematical equations because it is generally accepted that the understanding of social problems involves model-building. Although this approach is currently much more formal and allows assessing consistency and other desirable properties much easier than verbal representations [2, 3], still there are some disadvantages. Sometimes the equations which one would like to use to represent real social phenomena are rather complicated to be analytically tractable. Of course it is possible to make simplifying assumptions that make the equations solvable, but this should be done with much care as these assumptions are often implausible from a social point of view, leading to a theory that might be seriously misleading.

Nowadays, there is a third approach available for scientists studying social systems: computer simulations (or computer modelling). They involve representations of the model as computer codes which can simulate either quantitative or qualitative theories. The use of computer simulations is equivalent to the use of mathematical equations [1]. In the latter case the target phenomenon to be understood is modeled through a process of abstraction which produces mathematical or statistical equations. The equations are solved and the results are compared with observations in order to validate the proposed model. Besides, this approach allows to evaluate the effects of different input parameters on the behavior of the system.

The breakthrough in computational modeling in the social sciences comes with the development of agent-based models (ABM). The bibliography related with this technique is increasing [4, 5, 6, 7, 8, 9]. The interest in the application of such techniques has grown rapidly mainly as a result of the increasing availability of computational capabilities. Today, computer simulations have become an excellent way to model and understand social processes. The usefulness of social simulation modeling results as much from the process (problem specification, model development, and model evaluation) as the product (the final model and simulations of social system dynamics). Nevertheless, social simulations constitute a theory-guided enterprize. Results will often include the development of explanations, rather than the prediction of specific outcomes [6]. ABM are computer simulations of the local interactions of the members of a population which could be plants and animals in ecosystems [9], vehicles in traffic, people in society [10], etc. Bottom-up models can be formulated and modeled in such a way that local interactions at lower-level give rise to the spontaneously emergence of higher-level organizations whose properties are not possessed by the individuals nor directly determined by them .

On the other hand, ABM are useful to study and characterize social systems composed by heterogeneous agents which are autonomous, with differentiated learning capabilities, where agents can interact each other in differentiated manners under the influence of internal and external factors producing different internal social networks. A typical ABM consists of an environment or framework in which the interactions occur among some number of individuals defined in terms of their behaviors (procedural rules) allowing the tracking of the characteristics of each individual through time. These models are also useful in systems where the geographic landscape could be important and where it is desirable to understand the causal relations between traits and behaviors of agents

(micro-scale) with the global properties of the system (macro-scale) [6]. Finally, ABM have a great potential to assist us in the discovery of simple social effects by introducing simple models that focus on some small aspect of the social world in the "artificial society" the models built. As a result, one can uncover how simple principles of agent interaction produce highly nontrivial global complex behaviors.

## 1.1. The Axelrod Model

There are lots of applications to model different aspects of dynamics in society. In this chapter we are particularly interested in studying the Axelrod Model [10, 11] which is an agent-based model designed to investigate the dissemination of culture among interacting agents on a society (see the recent review in Ref. [12] for other models of social dynamics). Axelrod argued that culture "is something people learn from each other", and hence something that evolves through social influence. At the same time he asks "If people tend to become more alike in their beliefs, attitudes and behavior when they interact, why do not all differences eventually disappear?" [10]. To study the process of cultural propagation Axelrod built a model based on two simple assumptions which are observed empirically:

1. people are more likely to interact with others who share many of their cultural attributes, and

2. these interactions tend to increase the number of cultural attributes they share (thus making them more likely to interact again).

The first assumption is also called the principle of *homophily*, which is the principle of "likes attract".

The Axelrod model consists of a population of agents, each one occupying a single node of a square network of size $L$ and area $L^2$. The culture of an agent is described by a vector of $F$ integer variables $\{\sigma_f\}$ called *features* ($f$ = 1, ..., $F$). Each feature can assume $q$ different values between 0 and $q-1$. These are the possible *traits* allowed per feature. See Figure 1. In the original Axelrod model the interaction topology is regular bounded (non-toroidal). Each agent can interact only with its four neighbors (a von Neumann neighborhood) which are the most closer (only one step distant from the target agent of influence) without crossing the borders. Initially, individuals are assigned a random culture and the parameter $q$, which defines the possible traits in each cultural dimension,

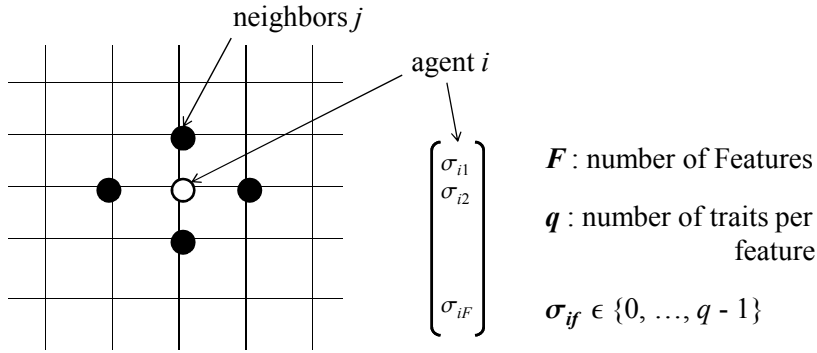


Figure 1. Schematic representation of agents' features in a 2D Axelrod model.

can be seen as a measure of the initial disorder or cultural variety in the system. In the temporal dynamics of the model at each time step $t$, the cultural profile of a randomly selected agent $i$ may be updated through the interaction with a randomly chosen neighbor $j$. According to the first assumption described above, the probability of this interaction is proportional to the corresponding overlap of their cultural profiles (the amount of features with identical traits) and is normalized with respect to the amount of features $F$. According to the second assumption above, when interacting, agent $j$ influences agent $i$ causing the last to adopt $j$'s trait on a feature randomly chosen from those that they do not share. Formally, the discrete-time dynamics of the system is defined by iterating the following steps:

1. Select at random an element $i$ in the lattice
2. Select at random a neighbor $j$ of the agent $i$ (from the von Neumann neighborhood)
3. Calculate the cultural overlap $O(i,j)$ (the number of features with the same trait value)
4. If $0 < O(i,j) < F$, agents $i$ and $j$ interact with probability $O(i,j)/F$. In case of interaction choose $h$ randomly such that $\sigma_{i_h} \neq \sigma_{j_h}$ and set $\sigma_{i_h} = \sigma_{j_h}$.

Then the interaction probability between any two agents changes in time because it depends of the number of common traits they share. Particularly, when

any two agents are completely different the interaction is stopped and if they are completely equal there is nothing new to copy one from the other and the interaction is also stopped. The process outlined above continues until no cultural change can occur. The dynamics then reaches an absorbing state which is one of the two possible final states. This happens when every pair of neighboring agents have cultures that are either identical or completely different.

At this final states it is explored the aggregate behavior by studying the spatial distribution of the emergent cultural regions: sets of spatially contiguous agents who share an identical vector of culture. Two final possible states are possible: only one cultural region is obtained or multiple cultures are obtained separated by a boundary. These states are called monocultural and multicultural, respectively. Studies of this system used two parameters to characterize the final states. One of them is the number of agents in the biggest cultural domain (usually designed by $S$) and the other is the number of different cultures that exist at the final state (usually designed by $g$). Clearly if the system ends up in a monocultural state we have $S = L^2$ and $g$ = 1, while lower (higher) values of $S\,(g)$ mean that a final multicultural state has been reached.

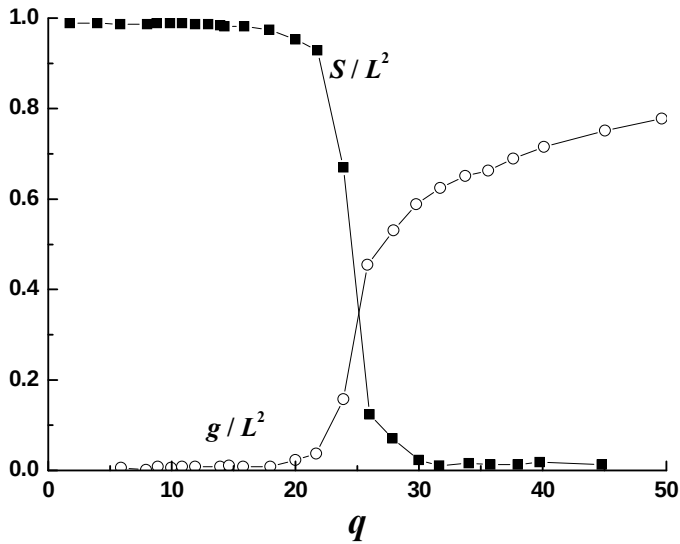


Figure 2. Dependence of $S$ and $g$ with respect to the initial diversity $q$. We have used for the calculation $F$ = 5 and $L$ = 40. The transition is obtained at a critical value $q_c \approx 25$.

From the statistical physics point of view, it was shown in Ref. [13] that the system undergoes a first order phase transition between the monocultural to a multicultural state for increasing values of the initial diversity $q$ and $F > 2$. The transition is continuous for $F$ equal or less than 2. The usual dependence of $S$ and $g$ is shown in Fig. 2, where we have set $F = 5$ and $L = 40$. The critical value where the transition occurs is $q_c \approx 25$. This value was found to increase as $F$ grows [14].

The Axelrod model incorporated the principle of "likes attract", or homophily [15] which, combined with social influence generates a self-reinforcing dynamics in which growing similarities strengthen attraction. In its turn, this attraction increases the influence giving rise to greater similarities. Even though this circular dynamics might appear to merely strengthen the tendency towards global convergence, Axelrod's computational studies showed how local convergence can preserve global diversity by cultural speciation. In the Axelrod model the social interaction becomes impossible between actors who have nothing in common and once influence between regions becomes impossible, their cultures evolve along divergent paths. Then, the Axelrod model has shown how tendencies towards local convergence in cultural influence can help to preserve cultural diversity when the influence between agents is combined with *homophily*.

## 1.2. Two Important Results of the Axelrod Model which Contradict the Common Sense

Even though the Axelrod model has become a breakthrough inspiring a range of follow-up studies, there are two key problems with Axelrod's explanation of diversity:

1. The first problem is the inability of Axelrod's model to explain diversity in large populations.

2. The second problem is the lack of robustness to noise [16, 17].

Axelrod himself noted the counterintuitive result of his model that generates diversity only for small populations. See Ref. [10], p. 22. Indeed it should be desirable to expect monoculture in small isolated groups (communities or tribal villages) and diversity in large societies.

An extensive examination of the culture-area relation on the Axelrod model was done in Ref. [18]. The authors have counted all the different culture configurations $G$ obtained in the final absorbing state without paying attention to

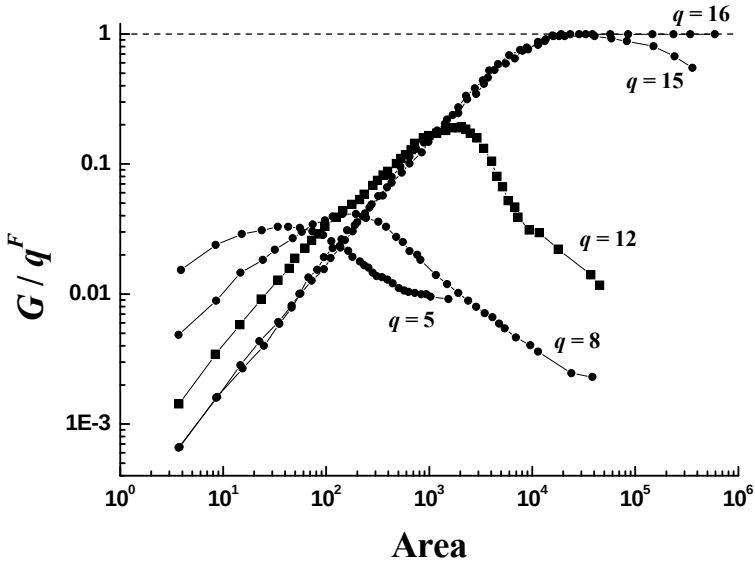


Figure 3. Culture-area relation for $F$ = 3 and five different values of $q$. The number of cultures $G$ has been normalized to the maximum amount of possible cultures for each value of $q$ used. In the limit of infinite area there are two distinct regimes: monoculture for $q < 16$ or full multiculturality for $q > 16$. Data obtained from Ref. [18].

simple connected regions. As there are $q^F$ different possible cultures, the parameter $G/q^F$ is normalized and its maximum value ($G/q^F$ = 1) means a completely multicultural state while low values are related with monocultural final states. The authors obtained a non-monotonic behavior for the culture-area relation for $q$ values below the critical value where the transition occurs ($q < q_c$) while for $q > q_c$ the number of cultures $G$ first increases in a power-law dependence $G \sim A^x$ with $x$ = 1 and then gradually flattens when the area becomes of the order of the maximum number of cultures $q^F$ (see Fig. 3). In the limit $L \to \infty$ there are only two possible outcomes: for $q < q_c$ a single culture dominates in an ordered regime, while $G \to q^F$ and all the cultures are represented in the network in a full disordered regime for $q > q_c$. The authors proved the transition between these two regimes to be discontinuous because $G$ jumps from 1 to $q^F$ at $q = q_c$.

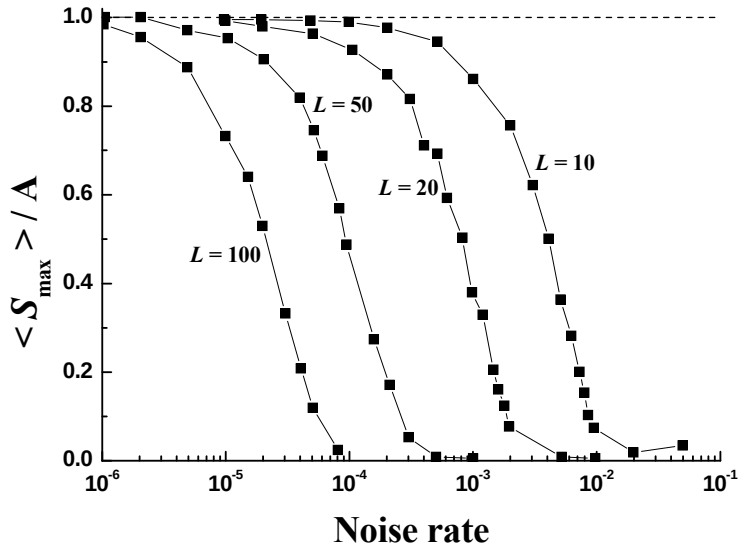


Figure 4. Biggest cultural size $< S_{max} >$ as a function of noise for four different values of $L$. Data obtained from Ref. [16] where it was used $F$ = 10 and $q$ = 100.

Then, multicultural states were shown to be unstable for increasing area and they remain only for sufficiently high values of the initial diversity $q$. Klemm *et al* in Ref. [16, 17] attempted to find a mechanism present in real life which allow the presence of multicultural state for big societies and introduced noise. These authors relaxed the assumption that cultural traits are entirely determined by the influence from neighbors and allowed for a small probability of random "perturbation" of cultural traits, showing that a small population that exhibits stable diversity under Axelrod's assumptions "drifts" towards monoculture in the presence of very small amounts of random cultural perturbations. This is because random cultural perturbations can disturb the equilibrium in which influence is no longer possible since all neighbors are either identical or totally different, generating a cultural overlap between otherwise perfectly dissimilar neighbors. Besides, perturbations allow for social influence across cultural boundaries to occur. Hence, formerly dissimilar neighbors become increasingly similar until no differences remain and a new cultural boundary forms around a larger region. Eventually this boundary could disappear also by new perturbations.

Then, multicultural states keep on remaining unstable, now with respect to very small amount of noise perturbation on the society.

Nevertheless, perturbations can also increase diversity if the rate of perturbations is sufficiently high and the heterogeneity is introduced faster enough as to inhibit social influence from taking advantage of the bridges created by perturbations when dissolving the boundaries between regions. Thus, perturbations are able either to reduce diversity or to increase it. In Ref. [16, 17] it was shown that for increasing population size the introduction of heterogeneities by noise is the predominant mechanism compared to the homogenizing effect. This was an important result which explained both the heterogeneity in large societies and the monoculture in small ones. Still, with this noise mechanism, it was proven that cultural diversity with local convergence is highly fragile with respect to very small changes of noise rate. This is shown in Fig. 4, where it can be seen that cultural diversity with local convergence is obtained only in a narrow window of perturbation rates below which diversity collapses and above which local convergence is destabilized. Moreover, the size of the window closes down as the population size increases and for large populations a strong multicultural state where each agent expresses a different culture is predicted.

Then, it remains necessary to find new mechanisms of interaction that would allow for higher stability against variations of the noise rate.

### 1.3. Previous Axelrod Models with Mass Media

The Axelrod model just described constitutes an autonomous system where all the complex dynamics originates from the internal rules. An interesting extension of the model consists of studying the system when an external influence is included making the system now non autonomous or forced by an external "force". This work has been done interpreting the external influence as cultural information broadcasting to the society by different mediums of massive communications (Mass Media), global propaganda, political parties, etc.

An initial work done by Shibanai *et al* in Ref. [19] simulates Mass Media effects by introducing an homogeneous influence applied to all agents with the aim of influencing globally in all the agents of the network. Surprisingly, even though the globally polarized state has been found to be very fragile and easily disrupted by any perturbation (extensions of the original Axelrod model), it was reported that a factor that aims at homogenizing the system actually favors polarization.

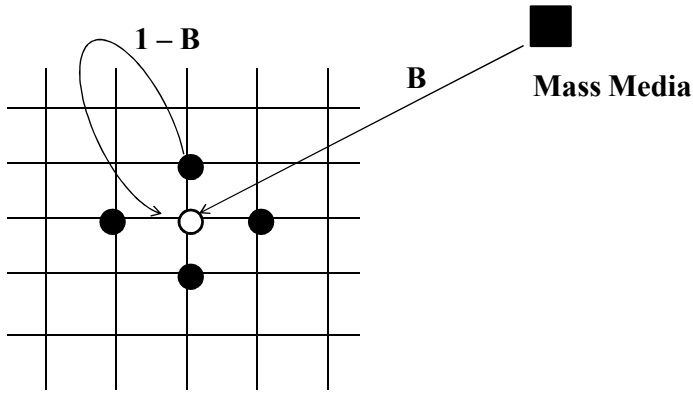


Figure 5. Axelrod model with Mass Media effects included as an external vector. The probability to interact with the Mass Media is $B$, while the probability of interaction between two agents is $(1 - B)$.

More recently, seminal works have studied more deeply the situation [20, 21, 22]. To do that it has been defined a vector $M = (\sigma_{M_1}, ..., \sigma_{M_F})$ that can interact with all agents on the society as an extra neighbor. Each one of its entries has a value $\sigma_{M_i} \in \{0, ..., q - 1\}$, and a parameter $B \in (0, 1)$ quantifies the relative intensity of the Mass Media message with respect to local interactions. It is a probability that the message in $M$ attracts the attention of the agents in the system. This parameter $B$ is uniform, i.e., Mass Media reaches all agents with the same intensity as a uniform field. Thus, each agent in the network possesses a probability $B$ of interacting with the vector $M$ and a probability $(1 - B)$ to interact with one of its neighbors. See Figure 5. As in the original Axelrod model, one initially chooses a target agent at random. Since the vector media $M$ is defined as a virtual agent the interaction follows exactly the same rules as before:

1. Select at random an element $i$ in the lattice.
2. With probability $B$ the element $i$ interacts with the vector $M$ or with a neighbor with probability $(1 - B)$. For each case
3. Calculate the cultural overlap $O$ between the active agent $i$ and the other interacting agent
4. If $0 < O < F$ the element $i$ interacts with probability $O/F$. In case of

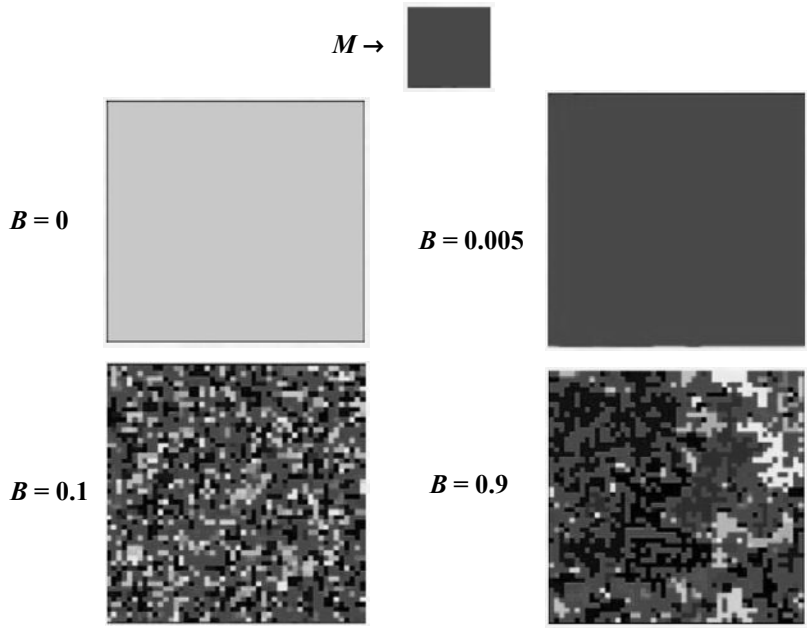


Figure 6. Spatial patterns for different values of the intensity $B$, for $F$ = 10, $q = 35 < q_c$, and $L$ = 50. The color for the Mass Media (M) vector is indicated for comparison.

interaction choose $h$ randomly such that $\sigma_{i_h} \neq \sigma_{M_h}$ ($\sigma_{i_h} \neq \sigma_{j_h}$) for the case of the media (a neighbor) and set $\sigma_{i_h} = \sigma_{M_h}$ ($\sigma_{i_h} = \sigma_{j_h}$).

Note that the original Axelrod model is recovered for $B$ = 0. When the Mass Media cultural influence is applied to the system the order-disorder phase transition shown on Fig. 2 persists, but the critical value $q_c$ for which the transition takes place decreases as the intensity $B$ of the message is increased. In Fig. 6 the spatial configurations of the final absorbing states of the system when the Mass Media is present are shown. We have used $F$ = 10 and $q = 35$ which is a value below the critical one, $q_c$. Then, when $B$ = 0 the dynamics of the system ends up in a monocultural state as shown in the left-upper case (different gray colors represent different cultural configurations of the agents). As one can see for the case $B$ = 0.005, the final absorbing state corresponds to a monocultural

state equal to the culture of the Mass Media. However, its seems there is a critical value of $B$ beyond which the system no longer converges to the state of the message $M$ but reaches a multicultural state with increasing number of cultural domains for increasing $B$, as can be seen for the cases of $B$ = 0.1 and $B$ = 0.9. This has been a surprising and counterintuitive result. Above some threshold value for the intensity $B$ Mass Media actually promotes cultural diversity on the system and only for sufficiently small values of $B$ the system is driven to a uniform regime with the culture of the Mass Media.

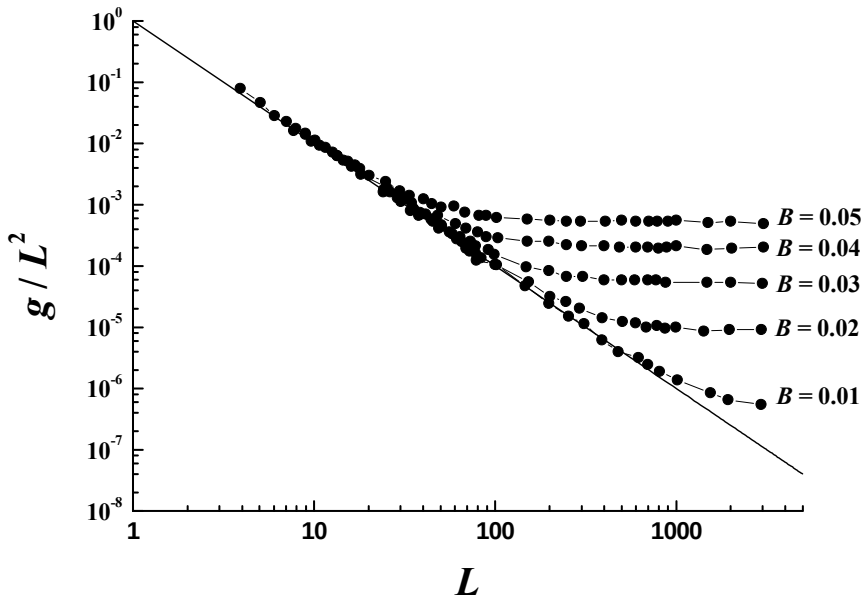


Figure 7. Logarithmic plot for $g$ as a function of the network size $L$ for different values of $B$. The solid line is $1/L^2$ (the value of $g$ in a monocultural state). $F$ = 5 and $q$ = 5 were used. Data obtained from Ref. [23].

A more careful analysis done in Ref. [23] revealed that the threshold value obtained for $B$ is just an effect of the finite size of the network used. In Figure 7 we have depicted the dependence of the parameter $g$ (already defined in section 1.1.) with respect to the network size $L$ for different values of $B$. The parameter $g$ is the number of cultural domains obtained in the final absorbing state. Two

or more equal cultural domains are counted separately. Then $g$ is bounded by $L^2$ and in the uniform regime we have $g/L^2 = 1/L^2$. For each value of $B$ the monocultural state is obtained for low values of the network size $L$ when $g/L^2$ roughly coincides with the value expected in uniform regime $1/L^2$. Still when sufficiently high values of $L$ are achieved, $g/L^2$ saturates and the possibility of a vanishing value for $g/L^2$ as $L \to \infty$ disappears. Then, the presence of a global element influencing the agent's opinion as an external homogenizing factor not only promotes polarization, but this effect is such a powerful factor that even a vanishing small influence (vanishing value of $B$) is sufficient to destabilize the culturally homogeneous state for very large lattice sizes.

To round off this section, let's mention that the Axelrod model has been exhaustively studied either analytically [24, 25, 26, 27] or numerically [28]. It has also been extended to study the cultural drift driven by noise [16, 14], the effects of combining nominal and metric features [15, 14], propaganda [29], the resistance of a society to the spread of foreign cultural traits [30], finite size effects [31], the impact of the evolution of the network structure with cultural interaction [32], the mobility of social agents [33], the *temperature* as an order parameter [34], and others. Besides, the Axelrod model has also been implemented on non-regular networks [35, 36, 37]. Some of these works were discussed and analyzed early in this section.

We have discussed how the multicultural absorbing state is unstable against noise and when increasing the area of the society. Even the expansion of communication by including higher connectivity on the lattice [26] or by placing agents in small-world and scale-free networks also resulted in cultural homogenization [17]. Additional parameters, as individual nonconformity, has also been considered as a way to explore new mechanisms that make the polarized state stable [38]. Surprisingly, the multicultural state has been found to be stable when a homogenizing external vector is present.

In what follows, we revise some new implementations of the Axelrod model with the presence of Mass Media effects introduced to overcome the drawbacks commented on previously. The rest of the Chapter is organized as follows: in the next section we explore a new approach to study Mass Media effects on the Axelrod model which makes it possible to obtain strong monocultural states when increasing the Mass Media strength. In section 3., a new approach for modeling the interaction between agents is studied, including Mass Media effects, which has been demonstrated to produce robust multicultural final states. Finally, some conclusions are outlined.

## 2. Axelrod Model with Clever Mass Media

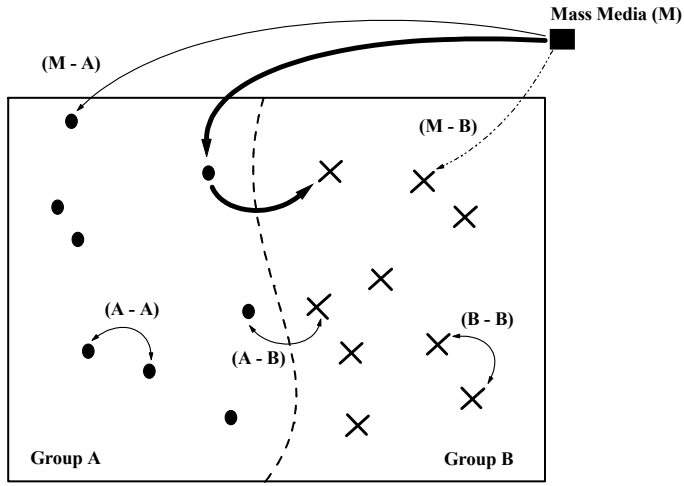


Figure 8. Former models' representation of agents and interaction rules in the lattice when the Mass Media is included (represented by a big square). Agents from group A are indicated with dots while agents in group B are indicated with crosses. Different interactions are represented with different lines. The diffusion mechanism from the agent $M$ to agents in group B is represented by thick lines. Null direct interaction between agent $M$ and agents from group B is represented by a dashed-dotted line.

To explain the counterintuitive results obtained in the previous models where the Mass Media is introduced as an external field, we have included Fig. 8 to analyze the dynamical mechanisms of the system when agents interact. The agent $M$ is represented as a full square external to the lattice. When present, it introduces an asymmetry on the society, which can now be described as composed by two groups of agents: group A where agents have trait(s) in common with the agent $M$ and group B whose elements do not share traits with the Mass Media. Agents of group A are represented as dots while agents from group B as crosses. The different lines in Fig. 8 represent all possible interaction between the system's elements, including the agent $M$. The (M-B) interaction, showed as dash-dot-dot line in the figure, is a null interaction because agents

from group B do not share traits with the agent $M$. In this way, the only opportunity for agent B to acquire one trait from agent $M$ is through a diffusion mechanism with the combined interactions (M-A) plus (A-B), as pointed out in Fig. 8 with a thick line. We model the strength of the agent $M$ using a probability $P$ for the interactions M-A and M-B, while the rest of interactions occurs with probability $1-P$. Therefore the diffusion mechanism has very low probability as $P$ increases and agents from group B are set apart from the Mass Media information. Furthermore, the mechanism M-B can be very active (time consuming) but with null effects, and the internal relaxing mechanism B-B is not able to drive agents to the final state in an efficient way. Thus, for high values of $P$ the M-A and M-B interactions dominate and the group B will contain high cultural diversity (because of the absence of relaxing mechanism A-B and B-B). Finally a multicultural state is obtained, being it stronger for higher values of the Mass Media strength $P$. This is, perhaps, a limitation of the model.

Nevertheless, the Mass Media, when acting over the agents of the society, designs its actions in a clever way to always have something in common with the people chosen as targets of publicity or propaganda. Mass media uses language and symbols shared by all the individuals in society to introduce its information with the purpose to homogenize people dressing, way of thinking, etc. At least one way to simulate this common information Mass Media and agents on the society share is the introduction of an extra common feature between any agent $i$ and the agent $M$. Then, the probability of interaction is described by

$$p(i,M) = \frac{O(i,M)+1}{F+1} \geq \frac{1}{F+1} > 0 \tag{1}$$

which has a minimum value min($p_{is}$) $= 1/(F+1)$ always greater than zero. The minimum value is obtained when there are not common traits between the agent $i$ and the agent $M$ and the overlap $O(i,M)$ is zero. This procedure was already used in Ref. [39] and Ref. [40] in regular and complex networks with community structure, respectively. As in Ref. [20], they have modelled the strength of the Mass Media as a probability of interaction between this agent and agents on the network. Increasing values of this probability imply a decreasing value of the probability that agents interact with each other. Then, the corresponding socialization process is stopped. The authors have found that only monocultural states are obtained in this case. When introducing noise rates on the system, different multicultural final states are attained.

In this section we are interested in further study this new approach. Never-

theless, as mentioned in Ref. [19], the media information is socially processed through personal networks. Thus, we think it is important to model the Mass Media strength in a way such that its increment does not destroy the interactions between agents in the society.

## 2.1. The Model

### 2.1.1. Nominal Features

Our system consists of $L^2$ agents as the sites of a square lattice. The state of an agent $i$ is defined as a vector of $F$ *nominal* components called features given by $\sigma_i = (\sigma_{i_1}, ..., \sigma_{i_f}, ..., \sigma_{i_F})$ which characterize the nominal $F$-dimensional culture of the corresponding agent. In this way, each agent has four nearest neighbors. The fifth (the Mass Media) is introduced as a vector field $M$ with nominal features $\sigma_M = (\sigma_{M_1}, ..., \sigma_{M_f}, ..., \sigma_{M_F})$. Then, each agent can interact with five agents: its four nearest neighbors and the agent $M$. In this approach all the interactions has equal probability (1/5 in this case). Additionally, each feature $\sigma_{i_f}$ and $\sigma_{M_f}$ can take any of the values in the set $\{0, 1, ..., q-1\}$ which are the corresponding cultural traits of an agent $i$ or the super-agent. As usual, at the beginning, the values of the vectors $\sigma_i$ and $\sigma_M$ are randomly and independently set to one of the $q^F$ available state vectors with uniform probability.

The interaction between different agents is possible only when the two cultures have an overlap $0 < O < 1$ where the overlap between two agents $i$ and $j$ is the number of shared traits and is given by $O(i,j) = \sum_{f=1}^{F} \delta_{\sigma_{i_f},\sigma_{j_f}}$. Here $\delta$ is the Kronecker symbol. The probability, which we call here *nominal* probability, of the interaction between two agents is given by $p(i,j) = O(i,j)/F$.

### 2.1.2. Effective Features

In general, the situation $p(i,j) = 0$ is possible when the overlap between two agents is zero but, as mentioned before, the case where the probability between an agent and the Mass Media is zero is not an acceptable situation for a clever publicity. In this case the connection is always active. In order to include this important effect in our model, we have included some *effective* features $\epsilon$, besides nominal features $F$, that the agent $M$ always shares with each agent. The specific nature in real society of the effective features is not of importance here. It could be the use of the same language, symbols with common interpretation in every-day life, etc. In general, it could be different for different

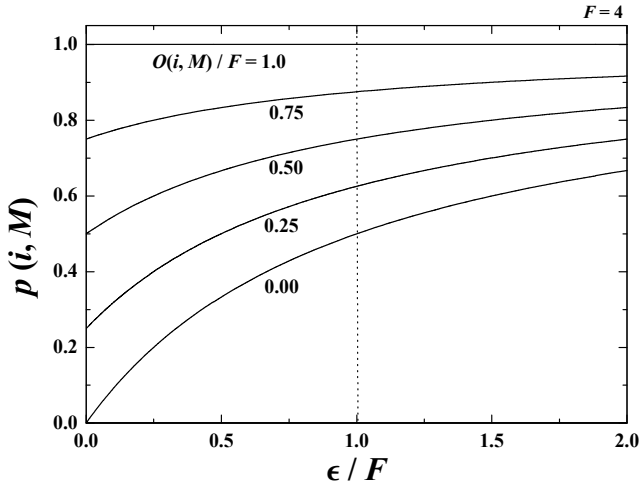


Figure 9. Probability of interaction between the agent $i$ and the vector field $M$ as a function of $\epsilon/F$ for fourth nominal traits ($F$ = 4) and different values of the overlap $O(i, M)$.

agents, but the intention is to take into account the clever design of the publicity that Mass Media does to influence everyone. Each individual "understands" the message of the publicity, even if they accept it or not.

Then, in our model any agent has $F$ nominal features and $\epsilon$ effective features which always shares with the Mass Media. Therefore, the probability of interaction between the external vector and agents, which we call here *extended* probability, is written as

$$p(i, M) = \frac{O(i, M) + \epsilon}{F + \epsilon} = \frac{O(i, M)/F + \epsilon/F}{1 + \epsilon/F}, \tag{2}$$

where $O(i, M)$ is the overlap of the nominal features between agent $i$ and the agent $M$. This way, the overlap $O$ counts the number of nominal features shared between agent $i$ and agent $j$ or an agent $i$ and the agent $M$. This parameter is related mainly to the dynamics between agents because is the only mechanism for them to interact, while the parameter $\epsilon$ counts the effective features an agent $i$ and the agent $M$ share. It constitutes the measure of its dynamics. For $\epsilon/F < 1$ the Mass Media and agents share more nominal than effective features and the Mass Media constitutes a "perturbation" to the internal interaction between

different agents in the society. The case $\epsilon/F > 1$ means that there are more effective features that certainly share each agent with the agent $M$ than the number of nominal features each agent has. Then it is now the society which can be considered as a "perturbation" with respect to the more robust influence of the agent $M$ over the agents. The former expression for the extended probability is similar to Eq. (1), but now, as a generalization, the parameter $\epsilon$ can take not only natural values but also fractional ones. It is worth saying that in this case the original Axelrod model is not recovered when $\epsilon \to 0$. If the parameter $\epsilon$ is set to zero it only clears the effective features between the Mass Media and the agents of the network, but the external influence is still present.

In Fig. 9 the values of the probabilities $p(i, M)$ as a function of $\epsilon/F$ for fourth nominal features ($F = 4$) and different values of $O(i, M)$ are shown. The values of $O/F$ = 0.00, 0.25, 0.50, 0.75 and 1.00 are obtained when the agent shares with the vector field 0, 1, 2, 3 and 4 nominal features. As it can be seen, the probability is zero only when there are not effective features ($\epsilon = 0$) and the overlap between the agent $i$ and the agent $M$ is zero. In contrast, in all the other cases the probability $p(i, M)$ is always greater than zero. For $\epsilon = 0$ the values for the case with no effective features are recovered. As expected, the probability is lager for larger values of the effective features $\epsilon$ at a given value of $O(i, M)$ and also increases for larger values of the overlap $O(i, M)$ at a given number of $\epsilon$. Finally, when the agent $i$ and the Mass Media share all the nominal features ($O(i, M)$ = 1) the probability is always one for any value of $\epsilon$.

### 2.1.3. Confidence Value for the Mass Media Traits

If the dynamics of the system only involves the extra parameter $\epsilon$ and it follows the usual rules described on section 1., but now including as a fifth neighbor the agent $M$ and the extended probability of interaction given by Eq. (2), only monocultural final states are obtained. The Mass Media always homogenizes the society to its own values.

A non trivial case appears if we instead include a value to describe the credibility of the information the Mass Media has. This value is clearly tested in massive surveys done by different social organizations in society, for example, when elections are closer in order to know the acceptance of a candidate. It is expected that a high value of this credibility increases the influence of the Mass Media over the whole society and, on the contrary, a low value could make the propaganda perhaps almost invisible. To study these effects we introduce a pa-

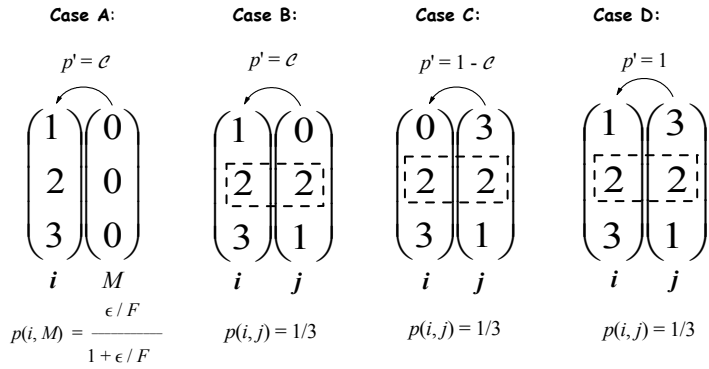


Figure 10. Four possible cases of interaction for a system with $F = 3$ features. Shared features are indicated inside a dashed rectangle. The probability of interaction $p(i, j)$ (or $p(i, M)$ in Case A) is indicating below. In each case the trait in $\sigma_{i_1}$ will be deleted by copying trait $\sigma_{j_1}$ (or by trait $\sigma_{M_1}$ in Case A). The probability of copying/deleting trait 1 is given by a) $p' = \mathcal{C}$, b) $p' = \mathcal{C}$, c) $p' = 1 - \mathcal{C}$ and d) $p' = 1$.

rameter called here the "confidence". It is included as a probability $p' = \mathcal{C}$ for agent $i$ to copy an entry directly from the agent $M$ or an entry from another agent $j$ with a trait value equal to that of the Mass Media. It is also included as an extra probability $p' = 1 - \mathcal{C}$ when agent $i$, when copying a trait from agent $j$, deletes an information the agent $i$ possesses which is equal to that the Mass Media possesses in the same feature.

To clarify this important concept we show in Fig. 10 four situations of interaction which summarize all the possible cases. In Case A it is described an interaction between agent $i$ and the agent $M$ which has been set to (0,0,0) without lost of generality. None of the nominal features are shared and the extended probability of interaction $p(i, M)$ depends only on the value of the effective features $\epsilon$ according to the expression in the figure. In the practical case when agent $i$ copies, for example the first entry, the Mass Media trait is copied with probability $p' = \mathcal{C}$ which characterizes the confidence of the information it possesses. In the next cases, the interaction occurs between agents $i$ and $j$

which only share one trait of three possibles. The probability of interaction is then given by the nominal probability $p(i,j) = 1/3$ in all these cases. In Case B the nominal feature that agent $i$ selects to copy from agent $j$ coincides with the value the Mass Media has in the same feature. Then, as in Case A, the corresponding trait is copied with probability $p' = \mathcal{C}$. In Case C, when copying, agent $i$ will delete its trait which is equal to that possessed by the agent $M$. Then, it is deleted with probability $p' = 1 - \mathcal{C}$. Finally, in Case D the traits copied and deleted are not related with the Mass Media and then they are copied/deleted with probability $p'$ = 1. Note that according to these rules of interaction, when the confidence of traits possessed by the agent $M$ is the highest possible ($\mathcal{C}$ = 1), these traits are always copied with probability $p'$ = 1 and never deleted. Otherwise, if the confidence of the traits possessed by the Mass Media is the lowest possible ($\mathcal{C}$ = 0), these traits are never copied ($p'$ = 0) and are always deleted with probability $p'$ = 1. Then, starting from the initial condition described above, the system evolves by iterating the following steps:

(1) Select at random an agent $i$ on the lattice, which is the active element.

(2) Select at random, with equal probability, an agent for interaction. It could be one of the four nearest neighbors or the agent $M$.

(3) Calculate the overlap $O(i,x)$ where $x = j$ for the neighbor or $x = M$ for the Mass Media. If $x = M$, the agent $i$ and the agent $M$ interact with the extended probability $p(i,M)$. If $x = j$ and $0 < O(i,j) < F$, agents $i$ and $j$ interact with the nominal probability $p(i,j)$.

(4) In case of interaction between agent $i$ and agent $x$, choose a position trait $h$ at random such that $\sigma_{i_h} \neq \sigma_{j_h}$ (or $\sigma_{i_h} \neq \sigma_{M_h}$) and then set $\sigma_{i_h} = \sigma_{j_h}$ (or $\sigma_{i_h} = \sigma_{M_h}$) according to:

(4.1) if $x = M$ then set $\sigma_{i_h} = \sigma_{M_h}$ with probability $p' = \mathcal{C}$,

(4.2) if $x = j$ and $\sigma_{j_h} = \sigma_{M_h}$ then set $\sigma_{i_h} = \sigma_{j_h}$ with probability $p' = \mathcal{C}$,

(4.3) if $x = j$ and $\sigma_{i_h} = \sigma_{M_h}$ then set $\sigma_{i_h} = \sigma_{j_h}$ with probability $p' = 1 - \mathcal{C}$.

(4.4) if $x = j$ and both $\sigma_{j_h} \neq \sigma_{M_h}$ and $\sigma_{i_h} \neq \sigma_{M_h}$, then set $\sigma_{i_h} = \sigma_{j_h}$ with probability $p'$ = 1.

Finally, the full probability that agent $i$ copies a trait from agent $x = \{j, M\}$ is given by

$$\mathcal{P}(i,x) = \begin{cases} \frac{1}{5}\, p(i,j)\, p' & ; x = j \\ \\ \frac{1}{5}\, p(i,M)\, p' & ; x = M \end{cases} \tag{3}$$

## 2.2. Numerical Results

We have performed numerical simulations in lattices with $L^2 = 30 \times 30$ agents and $F = 4$ features each. Different absorbing states have been found and we report the average number of agents in the largest domain over 50 different initial conditions. The absorbing states are obtained when all agents in the network have full or null overlap with each one of its neighbors. The Mass Media is not included to check this condition.

Figure 11 shows the calculations of $< S_{max} >$ as a function of $q$ at the absorbing state. Each panel shows the result for a certain value of the ratio $\epsilon/F$ and different values of the confidence $\mathcal{C}$. The result using the Axelrod model without Mass Media is included for comparison with full square dots. In this case, the system reaches a monocultural state at $q < q_c \approx 18$ and a multicultural state at $q > q_c$. In panel a) we set $\epsilon = 1.0$. It can be seen that when the value of the confidence $\mathcal{C}$ is small ($\mathcal{C} = 0.05$), the results are very close to those of the original Axelrod model. The monocultural states remain unchanged at $q < q_c$ but the multicultural state is less "robust" and higher values of $< S_{max} >$ are obtained. For increasing values of $\mathcal{C}$ higher values of $< S_{max} >$ for $q > q_c$ are obtained, as seen with $\mathcal{C} = 0.10$, and finally, at $\mathcal{C} = 0.15$, the multicultural states vanish and the system remains in monocultural states for all values of $q$. Then, the increasing value of the confidence induces an homogenization of the cultural information the system has, even at those values of $q$ where the system reaches multicultural states when there is no Mass Media influence. Multicultural states are unstable for increasing values of the confidence $\mathcal{C}$ at this value of the effective trait $\epsilon$.

In Fig. 11 b), c) and d) we calculated the $< S_{max} >$ for smaller values of $\epsilon$. It can be seen that multicultural states at $q > q_c$ are again obtained for low values of $\mathcal{C}$ but now higher values are needed for the confidence to produce a cultural homogenization ($< S_{max} > \approx 1$). This can be seen when comparing the results for $\mathcal{C} = 0.15$ in Fig. 11 a) with $\epsilon$ = 1 and in Fig. 11 b) with $\epsilon = 0.5$. In Fig. 11 c) it can be seen that at a very small value of $\epsilon$ ($\epsilon = 0.1$) the system

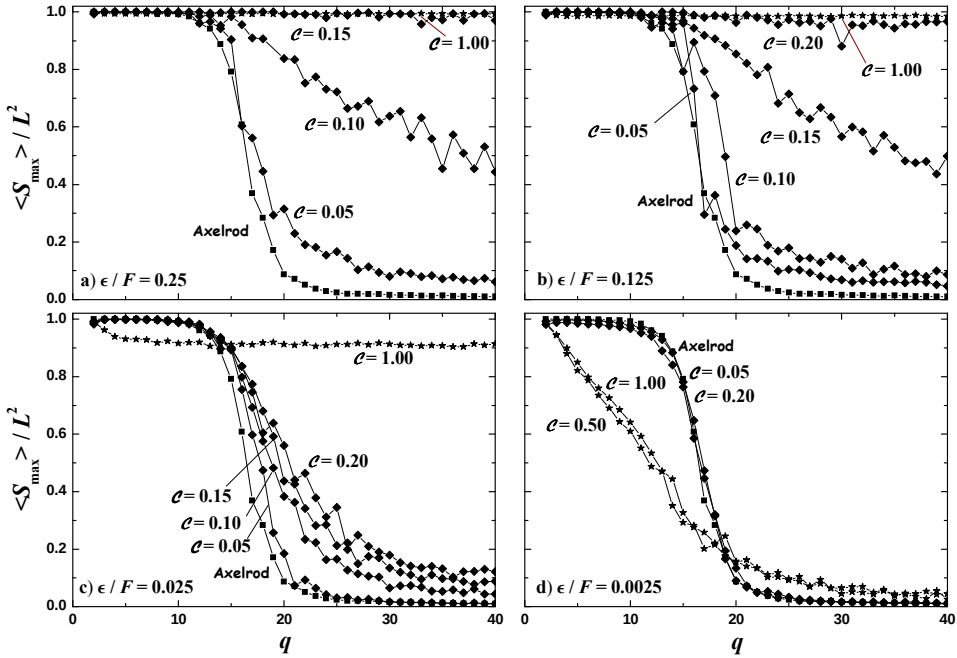


Figure 11. Calculation of the normalized average number of agents in the largest domain at an absorbing state as a function of $q$ averaged over 50 realizations. The values of the ratio $\epsilon/F$ are a) 0.25, b) 0.125, c) 0.025 and d) 0.0025. At each panel, different values for the confidence $\mathcal{C}$ are taken into account in increasing order. The case of the original Axelrod Model without Mass Media is included in each panel with full square dots. Full rhombus indicate that the corresponding absorbing states do not share the information possessed by the external field, while full stars indicate full coincidence of the absorbing state with the Mass Media.

has a multicultural state for $q > q_c$ with small increments of $< S_{max} >$ for increasing $\mathcal{C}$, and even at $\epsilon = 0.01$ (Fig. 11 d)) the transition from a monoculture to a multiculture at $q \approx 18$ is independent of the confidence for values between 0.0 and 0.2.

Nevertheless, care has to be taken when analyzing the information of the induced monoculture at $q > q_c$ when the agent $M$ is present (as the case $\mathcal{C} = 0.15$ in Fig. 11 a) and $\mathcal{C} = 0.20$ in Fig. 11 b)). It is interesting to know

whether the greatest domain in the absorbing state characterized by $< S_{max} >$ has, or not, the information possesses by the Mass Media in the corresponding nominal features. This information is indicated in Fig. 11, where all the full rhombus show absorbing states where the corresponding greatest domain does not possess the information of the agent $M$ in any of its features. That is, the overlap between the Mass Media and the cultural state of the largest domain is zero. Only at those absorbing states indicated by full stars ($\mathcal{C} = 1.00$ in all panels and $\mathcal{C} = 0.50$ in Fig. 11 d)) the corresponding biggest domain fully shares the information at nominal features of the agent $M$. Then, it is interesting that, at low confidence values $\mathcal{C}$, the culture homogenization induced by the Mass Media results in a negation or cancellation by the agents of the lattice of the information possesses by an external media. Here we call this phenomenon *negative publicity* effect. It represents the process occurring in a society when a group or different groups of people gather together, physically or intellectually, against an external action they consider misconceived.

## 3. Axelrod Model with *Social Influence*

As already discussed in section 1.2., the Axelrod model has two important limitations when studying the dependence of the final absorbing states with respect to the network size and to the presence of noise which were analyzed in Fig. 3 and Fig. 4: (1) the original Axelrod model predicts cultural diversity in very small societies, but monoculture in larger ones [18] and (2) when cultural perturbation is present, diversity is obtained only in a very narrow window of noise level and this window decreases with increasing population size [16, 17]. This result has been justified as a consequence of the *dyadic interaction* considered between the agents of the society which, at each time step, only comprises the source and the target of influence in a particular interaction [41]. The authors have argued that the influence a person feels from the society is a *social* phenomenon that cannot be reduced to the interactions within a dyad given by a source-target couple of persons because the social pressure on the target to adopt an opinion is proportional to the number of people that the target perceives are supporting this opinion. On the contrary, the Axelrod model assumes that influence is interpersonal (dyadic). We are then in front of a two completely different assumption with respect to the way people interact in society:

1. dyadic interaction where it is supposed that two people in a relationship

interact in isolation from others and

2. social influence which is multilateral and involves all network neighbors simultaneously.

In Ref. [41] the authors explained that the central implications of Axelrod's model profoundly change if the *dyadic interaction* is changed to *social influence*. They have shown that the combination of social influence with *homophily* (the principle that "likes attract") solves the two important problems already mentioned. Besides, Ref. [41] proposes an alternative model which uses social influence instead of dyadic interaction. The procedure is defined as follows: When an agent $i$ is randomly selected for possible influence, all of its neighbors $\{j_1, ..., j_\alpha, ...\}$ are stochastically included in a set of influence $\mathrm{I}_i$ with probability $p_{ij_\alpha} = O(i, j_\alpha)/F$, where $O(i, j_\alpha)$ is the cultural overlap between agent $i$ and neighbor $j_\alpha$. The set $\mathrm{I}_i$ obtained by this procedure becomes a set of traits' influence over agent $i$'s traits.

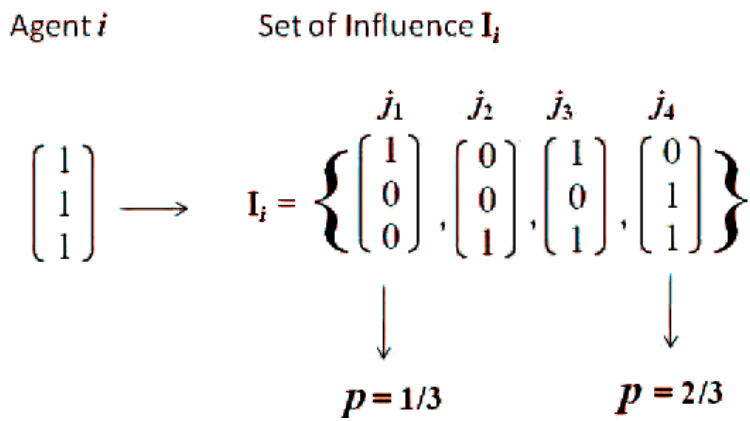


Figure 12. Social interaction between agent $i$ and its neighbors $\{j_1, ..., j_\alpha, ...\}$. Each neighbor is included with probability $p_{ij_\alpha}$ into the set of influence $\mathrm{I}_i$.

Figure 12 illustrates the social influence procedure. In the example shown, the agent $i$ selected has cultural traits (1,1,1) and the neighborhood is formed by the most closed neighbors (von Neumann neighborhood). We have supposed that all the fourth neighbors have entered into the set of influence $\mathrm{I}_i$ on the present example (for clarity, we have explicitly indicated the probability $p_{i,j\alpha}$ of two neighbors). Once the current influence set $\mathrm{I}_i$ is established, an agent $i$'s

feature is selected at random with a trait value different from the corresponding value of at least one agent of the set $\mathrm{I}_i$ in the same feature. The decision of which trait value agent $i$ adopts (if any change takes place) is done in such a way that agent $i$ imitates (or copy) the most common trait in the set $\mathrm{I}_i$ for the feature selected. If, for example, in the situation depicted in Fig. 12, the feature selected on agent $i$ were the second (that in the middle), this trait value ($\sigma_{i,2} = 1$) will be changed to $\sigma_{i,2} = 0$ due to highest frequency of this last value in the set $\mathrm{I}_i$. If the feature selected were the third (from top to down), the value $\sigma_{i,3} = 1$ will remain due to the highest frequency of this value on the set $\mathrm{I}_i$. The last possible case represented in Fig. 12 occurs if the first feature were selected. In this case, on the set of influence $\mathrm{I}_i$, we have the same frequency of appearance for the values 0 and 1. In this situation, one of the two values is chosen at random and then, the trait value $\sigma_{i,1} = 1$ in agent $i$ could remain with probability $1/2$ or changed to $\sigma_{i,1} = 0$ with the same probability. Then, when social interaction is at work, the trait value of agent $i$ is changed to the value of the corresponding trait with highest frequency of appearance on $\mathrm{I}_i$. If there are more than one, it is changed to one of them with equal probability. The trait value of agent $i$ does not change if this is the only one with the highest frequency of appearance on $\mathrm{I}_i$.

The results obtained when social influence is at work are included in Fig. 13 and 14. In the first figure, we have reported the dependence of the amount of different cultures (the same parameter reported in Fig. 3) as a function of the network size. For the parameters used, if dyadic interaction were used a transition from a monocultural to a multicultural state at $q_c \approx 13$ would be obtained, as shown in the inset. The corresponding behavior of the number of cultures in the final state as a function of network size will correspond qualitatively with that shown on Fig. 3. Contrarily, when the model is changed including instead of dyadic interaction social influence the problematic result of the Axelrod model which produces a multicultural final state only for small societies [18] is overcome and only multicultural final states are obtained for values of $q$ below and above the critical value $q_c$. Moreover, the authors of Ref. [41] have reported more robust behavior of the final state with respect to noise, as can be seen when comparing Fig. 14 with Fig. 4. When social influence is present in the system there is no variation of the parameter $S$ for a wide range of noise rates, contrary to the behavior observed in Fig. 4.

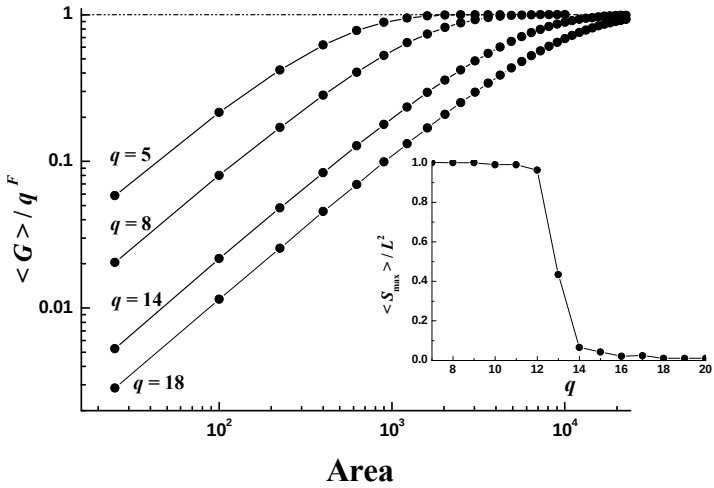


Figure 13. Culture-area relation when social influence is at work for $F$ = 3, $L$ = 50 and different values of $q$. 200 random initial conditions were used. In the inset, we have included the dependence with $q$ of the maximum culture at the final absorbing state for the original case of dyadic interaction (the same parameters were used, but averages are over 5 initial random conditions).

## 3.1. The Model for Self-included Social Influence with Mass Media

### 3.1.1. Description of the Model

In this section we discuss an extension of the formalism of social interaction in the Axelrod model to include Mass Media effects. Let's characterize the neighborhood of any agent by a parameter $p$ which controls how many agents can be visited (in unitary steps) in each direction starting from that agent until the perimeter of the neighborhood is reached. One unit-step allows to move only in north-south or east-west direction. When $p$ = 1 the neighborhood obtained is therefore the well-known von Newmann neighborhood $N_1$, which only includes the fourth closer neighbors of an agent ($N_1 = \{j_1, j_2, j_3, j_4\}$). The parameter $p$ can take higher values to define bigger neighborhoods. In general, for a given value of $p$ it is obtained $N_p = \{j_1, ..., j_\alpha\}$ where $\alpha = \alpha(p) = 2p(p+1)$. This give fourth neighbors ($\alpha = 4$) for one step neighborhood ($p = 1$), twelve neighbors ($\alpha = 12$) for two step neighborhood ($p = 2$) and so forth. In our model we

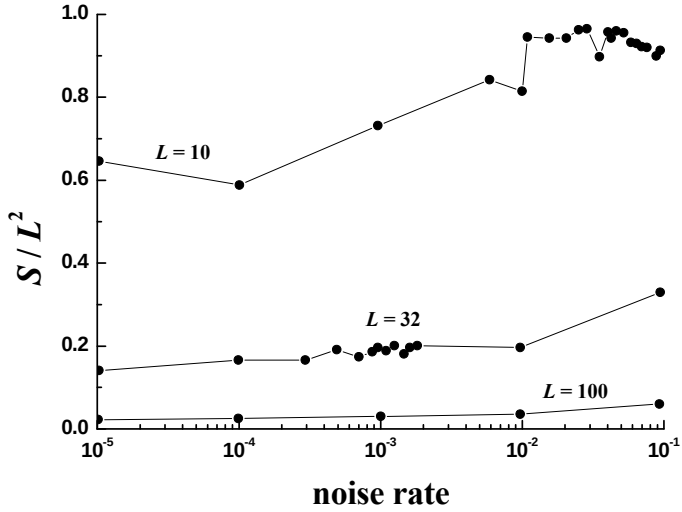


Figure 14. Effects of the noise level on the final absorbing state when social influence is present. $F$ = 5 and $q$ = 15. Data obtained from Ref. [41].

have decided to include also agent $i$ into the set $\mathrm{I}_i$ with probability $p_{ii} = 1$. This allows a self-reflection of agent $i$ about its own traits when comparing with the traits of its neighbors. Then, each agent is aware of its own traits when being influenced by its neighbors and its own traits count when deciding to change, or not, its corresponding value for a different one.

We have also included the Mass Media effects as an extra neighbor that each agent of the society has. It is an extra agent to be analyzed for inclusion on the set of influence of any agent $i$. The probability $p(i, M)$ to be included is given by Eq. (2). Then, the agent $M$ has always a non-zero probability to be included in the set of influence $I_i$. The higher the value of the strength $\epsilon$, the higher the minimal inclusion probability, see Fig. 9. Moreover, the model is implemented using periodic boundary conditions (toroidal society) to avoid boundary effects.

In the case of dyadic interaction and in the absence of noise, when analyzing the possible final absorbing states, it is simpler to establish it by checking when each agent has full or null overlap with each of its neighbors. In the case of social influence the problem is more involved. However, it is also possible to establish some technical conditions to be checked to see if an agent is active (i.e.,

can interact with its neighbors according to the dynamical rules established in the model) or not taking in consideration the set of influence $I_i$. When all the agents of the society are inactive, then an absorbing state is obtained.

Here we have also implemented the procedure developed in Ref. [18] where a list of active agents is built. Instead of randomly selecting agents of the society in each time step, the agents are randomly chosen directly from this list. This procedure strongly increases the efficiency of the dynamical evolution of the system and allows to save computational time. Therefore, when the system is initialized by randomly assigning different cultures to each agent of the society, the first list of active agents is built. Next, at each time step, when the influence is established and an agent of the society changes its cultural value, the list of active agents is updated analyzing the agent itself and all its neighbors to check which of them are now active. The dynamical iteration keeps on until the length of the active agents list is reduced to zero. It is worth noticing that in our case (where social influence is established), some runs did not settle into a final, well-defined absorbing state. In these cases the list of active agents reduces to one element and each time this agent changes its cultural values and becomes inactive, one of its neighbors becomes active. This propagation seems to go on indefinitely. We have neglected these cases from our calculations and we have only considered runs which finish in a precise well-defined final absorbing state.

We have implemented different computational experiments to study the Mass Media effects in the Axelrod model when the social influence is the mechanism at work for agents interaction. As there is no qualitative difference on the dynamical behavior of the system for $F \geq 3$, we have set $F = 3$ in the present study, a network size with $L = 50$ (2500 agents unless otherwise stated) and averages have been taken over 200 different initial random configurations.

### 3.1.2. Culture-Area Dependence

We have studied the influence of the Mass Media in the culture-area relation when the interaction on the society is social. We have calculated the amount of different cultures present in the final absorbing state as indicated by the previous definition of the parameter $G$ on section 1.2.

In Fig. 15 it is included with black circles the final cultural diversity $G$ for a fixed value of the Mass Media strength $\epsilon$. It can be seen that at $\epsilon = 0$ the amount of cultures obtained in the final absorbing state increases for increasing value of the area and reaches the maximum multicultural state for sufficiently

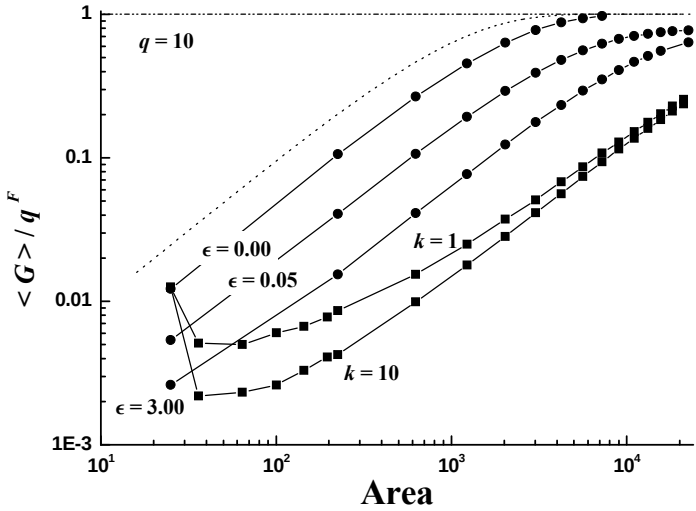


Figure 15. Culture-area relationship for $q$ = 10 and different values of $\epsilon$, indicated with labels. The dotted line follows Eq. (5). Squares represent the cases for which calculations were done according to the relation given by Eq. (4), with the value of $k$ indicated with labels. The area is obtained according to $A = L^2$.

high values of $A$. The calculation done with any other value of $q$ gives the same dependence of the area which includes the same slope and only a parallel shift. The other curves were then not included for simplicity. We have then qualitatively reproduced the results obtained in Ref. [41]. In our case, a calculation of the slope yields $x = 0.42 \pm 0.02$, which is different to that reported in Ref. [18]. We think that the deviation is due to the difference that arises when dyadic interaction or social influence is included.

When effective features are included setting $\epsilon > 0$ the values of $G$ are lower for higher strength $\epsilon$ at the same value of the area, but the slope of the curve is the same as the case $\epsilon$ = 0. The agent $M$ also prevents the system to reach the full multicultural state ($< G > /q^F = 1$) for higher values of the area for $\epsilon > 0$. This can be seen in the curve for $\epsilon$ = 0.05, which saturates at values of $A > 10^4$. The same seems to occur with $\epsilon$ = 3.00. Calculations taking in consideration two-step neighbors were also carried out with the same qualitative results (including slope and saturation). Only a shift to decreasing values of $G$

was obtained for the cases of $\epsilon$ = 0.00 and 0.05, but the shift finally disappears for $\epsilon$ = 3.00 meaning that for strong enough Mass Media the relative importance of the amount of neighbors including in the set of influence is weak (at least for the value of $q$ = 10).

Furthermore, on the dynamics of the system there are two parameters which compete to produce opposite effects for increasing values of each one. For increasing area of the network the system tends to reach a multicultural state while an increasing value of the Mass Media strength $\epsilon$ pushes the system to a more cultural global absorbing state. In order to study the relative weight these parameters have over the system, we have also calculated the final absorbing state when both the area $A$ and the strength $\epsilon$ increase. To accomplish this purpose we have established a dependence of the strength $\epsilon$ to the area given by the following relation:

$$\epsilon = k(A - 5) \tag{4}$$

In Fig. 15 it is included, with black squares the results for $k$ = 1 and 10. The values of the diversity $G$ obtained are higher for $k$ = 1, than for $k$ = 10, due to the lower rate of increase of the strength $\epsilon$ and consequently a more multicultural final state is induced. Nevertheless, both curves increase for increasing area, which means that the area of the network has more weight than the strength $\epsilon$ on the dynamics of the system, as expected if we examine Eq. (2). In our case, the maximum overlap between the agent $M$ and any agent of the network is max$(O(i, M)) = F = 3$. Then, for $\epsilon/F \gg 1$ (which occurs rapidly for increasing values of $A$ in Eq. (4)) it is obtained than $p_{is} \longrightarrow 1$ and the relative increase of the probability $p_{is}$ is cancelled out with the effects of the increasing area. This explains also why the curves for $k$ = 1 and 10 tend to the same values as the area is increased.

Then, when social interaction is present according to the present model, increasing network size always drives the system to a multicultural state, while increasing Mass Media strength prevents the system to reach the maximum possible of cultural configurations. Additionally, the saturation value of $G$ seems independent of the value of the strength of the Mass Media, as far as our calculations have shown.

We have also included in dotted line in Fig. 15 the analytical expression reported in Ref. [18]

$$< G >= q^F \left(1 - \mathrm{e}^{-A/q^F}\right) \tag{5}$$

which is the average number of cultures in the totally disordered configuration where agents are randomly assigned with one of the $q^F$ available cultures. The expression is valid for $A$ and $q^F$ very large. As can be seen, the prediction from Eq. (5) overestimates the values for the cultural diversity as a function of the area. The results are more different the higher the values of the Mass Media strength $\epsilon$ are, since it is a factor that decreases the cultural differences between neighboring agents.

### 3.1.3. Culture-Noise Dependence

We next consider the same model but now including noise. In this case it is not possible in general to define a final absorbing state and the dynamical evolution of the system is stopped by defining some criterion related with a definition for the stationary state that the system reaches. In our case, we have included noise *only* in those agents which are active on each time step, and do not in the rest of the society. This has allowed us to reach final absorbing states even when noise is present.

Following Ref. [41] we have included *interaction* errors as well as *copying* errors. The interaction error relaxes the previous deterministic procedure used in former works of the Axelrod model when deciding the possible interaction between two agents (dyadic interaction). Both copying and interaction errors can randomly alter the outcome of an interaction event. The interaction error acts over the selection procedure as follow: if the normal procedure of selecting an agent $j$ for being included in the set of influence $\mathrm{I}_i$ results in its inclusion, then with probability $r'$ the neighbor $j$ is removed from $\mathrm{I}_i$. If the neighbor has not been selected into the influence set, then with probability $r'$ the agent $j$ will be included into $\mathrm{I}_i$. This error creates the possibility that cultural influence occurs across the boundary of two disconnected cultural regions if a neighbor with zero overlap is included in the influence set. This error can also reduce the social pressure against adopting different trait values when a cultural identical neighbor is excluded from the set of influence and increases the possibility for the target agent $i$ to adopt trait values from a completely different culture. On the other hand, the copying error acts after agent $i$ has adopted (or not) a different trait value and the new trait value has been already set up. In this case, the corresponding trait value adopted by agent $i$ is changed to a new randomly selected value with probability $r$. Notice that the new value randomly generated could be that one the agent $i$ already has or just deleted.

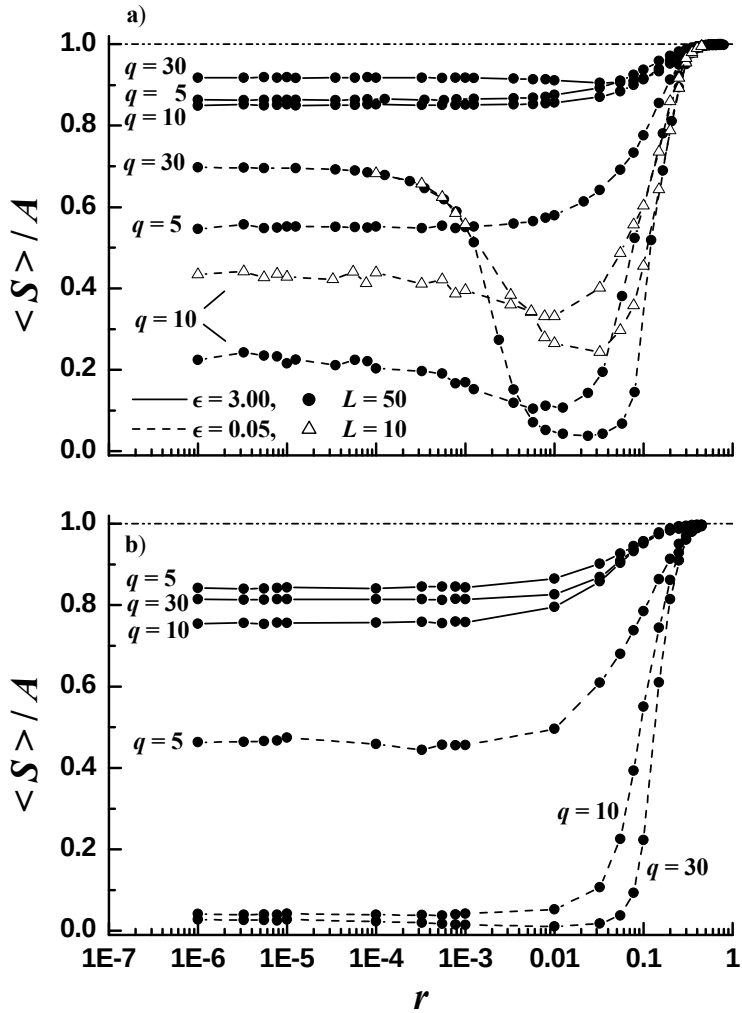


Figure 16. Dependence of the final absorbing state with respect to different noise levels and different values of $q$. In solid line it is included the case with $\epsilon$ = 3.00 while dashed lines are the cases with $\epsilon$ = 0.05. In black circles the final absorbing states calculated with a network size of $L$ = 50 are reported, while the white triangles correspond to the case with $L$ = 10. a) Calculation done including one-step neighbors (von Neumann neighborhood). b) Calculation done including two-step neighborhood.

In Fig. 16 it is reported the dependence of the parameter $< S > /A$ with respect to different noise levels for several values of $q$, $\epsilon$ and $L$. In general, both interaction and copying errors are conceptually different, but for simplicity we have used here the same value $r = r'$. In panels a) and b) we have considered one- and two-steps neighborhoods, respectively. The noise included ranges from 0 to 0.45. As it can be seen when comparing with Fig. 4, social influence makes absorbing states more stable to a bigger range of noise level than dyadic interaction, as already reported in Ref. [41]. In general there is no qualitative change for at least three orders of magnitude for all the values of $q$, $\epsilon$ and $L$ used. For higher strength of Mass Media ($\epsilon$ = 3.00, min($p_{is}$) = 0.5) the final absorbing state remains almost monocultural for fourth orders of noise level and finally for noise values higher than 0.1 the system is driven to a full monocultural state reached at $r$ = 0.45 approximately. The situation is different for low values of Mass Media strength ($\epsilon$ = 0.05). In this case the final absorbing state is also stable to different noise levels, but only for three orders of magnitude. In panel a) of the Figure it can be seen that for $q$ = 5 and noise level higher than $r$ = 0.01, the system is driven to a monoculture. For increasing noise level at $q$ = 10 and 30 (for $\epsilon$ = 0.05) there is first a reinforcement of the polarized state, given by decreasing values of $< S > /A$ (stronger induced for $q$ = 30), and later for higher values of $r$ it is induced a monoculture. All the calculations shown in black circles have been done with a network size of $L$ = 50. In order to study whether the stability of the final absorbing state to noise is robust with respect to the network size, we have also explored the case with network size $L$ = 10. Quantitative differences arise only for $q$ = 10 and 30, for $\epsilon$ = 0.05 (white triangles in Fig. 16 a)). In general it is observed that the final absorbing state is stable to the same range of noise independent of the network size. The difference as given by the higher values of $< S > /A$ for $q$ = 10 and the higher minimum for $q$ = 30 at $r$ = 0.05 (both for $\epsilon$ = 0.05) are due to the lower size of the network ($L$ = 10). There are no quantitative differences for the other parameters due to the rather trivial case of $q$ = 5 (for any value of $\epsilon > 0$) and for the high value of $\epsilon$ used.

In Fig. 16 b) we have included the same results of panel a) calculated with $L$ = 50, but now considering two-step neighbors. The results are qualitatively the same for $\epsilon$ = 3.00 (no matter the values of $q$) and for $q$ = 5 and $\epsilon$ = 0.05. For the case of $\epsilon$ = 0.05 and $q$ = 10 and 30 the system ends up in a multicultural state for almost all the range of noise levels. Nevertheless, for sufficiently high noise level the system is abruptly driven to a monocultural state, as in all the others

cases.

A possible explanation of the results obtained with this experiment is a s follows. There are three parameters involved: the initial cultural diversity $q$, the strength $\epsilon$ of the agent $M$ and the noise level $r$, and two different error mechanisms: the copying and including errors. For low values of $\epsilon$ the agent $M$ will appear on the set of influence $I_i$ with low frequency. This frequency increases for increasing $\epsilon$. For low values of $q$ the majority of the neighbors of the target agents will be included on $I_i$ because of the low cultural diversity, while the opposite occurs for large enough values of $q$. Nevertheless, as can be seen from the figure, this complex interplay does not has an important impact on the dynamics of the system along a wide range of noise level and the value of $< S >$ remains almost constant. When $r \geq 0.1$ the copying error becomes the dominant mechanism because independently of the cultural trait an agent has copied from its neighbors, the copying error changes it to any one randomly selected and as it was already said, it deletes the boundaries between different cultural regions. It is also important that the error mechanism stop when the agent becomes inactive. Then, the social influence is the mechanism which allows an agent to be active/inactive and it is also the mechanism which switch on/off the copying error. Hence, as the copying error connects two completely different cultures the homogenization is favored and agents become inactive (and noise stops) when their culture is completely equal to that of its neighbors. Thus, the final monoculture obtained at $r$ = 0.45.

At lower values of noise a non monotonic behavior is obtained for $q$ = 10 and 30 when the strength $\epsilon$ has low values ($\epsilon$ = 0.05 in this case). The value of $< S >$ first decreases for increasing noise reinforcing the multicultural state. This effect is strongly pronounced at $q$ = 30. In these cases, the initial diversity makes it possible that the set $I_i$ be formed only by the target agent and some of its neighbors. More neighbors will be present on the set of influence for $q$ = 10 than for $q$ = 30. For increasing noise the including error makes the set $I_i$ populated by both agents from cultures which share some traits with the target agent and also with agent neighbors which do not. The agent $M$ will also be included. This interplay seems to produce strong local convergence and drives the system to a multicultural state for a range of noise between 0.01 and 0.1. Finally the copying error drives the system to a monoculture state for even higher values of $r$.

### 3.1.4. Dependence on the Diversity of the Initial Culture

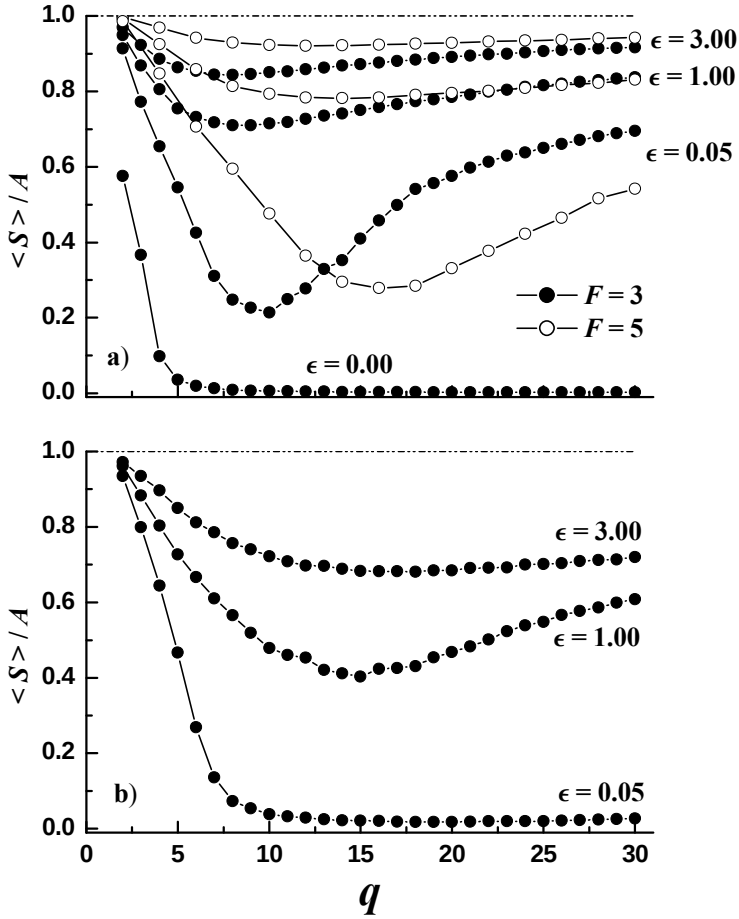


Figure 17. Final absorbing states in the Axelrod model with social influence as a function of $q$ for different values of $\epsilon$. Calculations with $F = 3$ are included in full circles, while the case $F = 5$ is shown with empty ones (only in panel a)). a) Calculation done including one-step neighbors (von Neumann neighborhood). b) Calculation done including two-step neighborhood.

In Fig. 17 we represent the normalized value of $S$ as a function of the initial diversity $q$ with no noise ($r = 0$). Panel a) corresponds to calculations with one-

step neighborhood ($p$ = 1) while in panel b) the calculation was done for $p$ = 2. This means that the amount of neighbors of each agent in panel a) are only four plus the agent $M$ while in case b) each agent has now twelve neighbors besides the Mass Media. Different values of the Mass Media strength $\epsilon$ are included in both cases. All the calculations shown with full circles correspond to $F$ = 3 while $F$ = 5 was used for the calculations shown with empty ones. Averages over 200 initial random conditions were done. It can be seen that for low values of $q$ the system reaches a close-monocultural state for any value of the strength $\epsilon$. These are rather trivial cases because these extremely low values of $q$ mean a very low initial diversity of the system and a final close-monoculture state is then expected.

A close monocultural states are also induced for high enough values of $q$ but the system is now more sensitive to the values of $\epsilon$ than in the region of low $q$ values. In this case, higher values of $\epsilon$ induce stronger global final states given by higher values of $S$. To explain this result, we note that higher values of $q$ mean that initially there is a higher degree of cultural diversity on the society and this is reflected in sets of influence I with low number of neighbors, i.e., each set of influence $\mathrm{I}_i$ will be frequently composed by the own agent $i$ and by the agent $M$, and with low probability by the neighbors since they probably do not share any of their trait values with agent $i$. The probability of the agent $M$ to be included in the set of influence $\mathrm{I}_i$ increases when the value of $\epsilon$ is increased. For higher $q$ values, in cases where $\mathrm{I}_i$ is formed by agent $i$ and agent $M$, the last one will be able to introduce its own value on agent $i$ with probability 0.5. The iteration of this process in time drives the system to a close monocultural state.

A more interesting situation occurs for middle values of $q$ where it is observed a minimum of the $< S > /A$ values as a function of $q$. The minimum of $< S >$ is very pronounced for $\epsilon$ = 0.05 in Fig. 17 a) at $q$ = 10 and 17 for $F$ = 3 and 5 respectively, while in Fig. 17 b) is strongly observed at $q$ = 15 for $\epsilon$ = 1.00. For values of $q$ close to the corresponding minimum, the initial diversity is such that besides agent $i$ and $M$, some of the agent's neighbors are also included in the set of influence I. Then the interacting dynamics involves higher cultural diversity on the set of influence $\mathrm{I}_i$ and the agent $M$ fails to induce a strong monocultural final state.

When comparing Fig. 17 a) and b) for calculations with $F$ = 3 it is interesting to note that the increment of the number of neighbors included in the social interaction decreases the size of the biggest culture in the absorbing state and then a more pronounced multicultural state is reached for the same values of $q$

and $\epsilon$. The value of $q$ where the minimum of $S$ is attained also increases. This is a consequence of a direct competition between the higher diversity on the set $I_i$ and the homogenized influence of the Mass Media. In Fig. 17 b), the amount of neighbors to be analyzed for inclusion on the set $I_i$ is twelve. Three times the case in Fig. 17 a), which is only fourth. Then with $p$ = 2, at any value of $q$ there will be, with higher probability, bigger diversity of trait values than in the case of $p$ = 1 and, therefore, a weaker homogenizing effect of the Mass Media is expected. This decreases the possibility of the agent $M$ to drive the system to a monocultural absorbing state because the probability for a trait value of the agent $M$ to appear with the highest frequency on the set of influence is lower and consequently lower values of $S$ are obtained. Then, when considering more neighbors in the social interaction the higher local diversity reinforces the final multicultural state, even with the presence of a Mass Media. The opposite effect is obtained when comparing in Fig. 17 a) the cases with $F$ = 3 and $F$ = 5 for $\epsilon$= 1.00 and $\epsilon$ = 3.00. In both cases, the increasing number of features of the agents favors the monocultural states, being $< S >$ for $F$ = 5 slightly above the corresponding value for $F$ = 3. The case of $\epsilon$ = 0.05 with $F$ = 5 is qualitatively the same of that with $F$ = 3, but the minimum occurs at a higher value of $q$.

### 3.1.5. Culture-Mass Media Strength Dependence

Figure 18 shows the values of the same parameter $< S > /A$ now as a function of the Mass Media strength $\epsilon$ for three different values of $q$. In this case, noise has also been neglected. One and two-steps neighborhoods are included in panels a) and b) respectively. Calculations are done with $F$ = 3 and $F$ = 5, and also with $L$ = 50 and $L$ = 10, for comparison. For any combination of parameter, a full global state is strongly induced as $\epsilon$ increases due to the constant presence of the agent $M$ on the set of influence. As $\epsilon$ increases the agent $M$ becomes a factor of "normalization" making its own values constant in time along the dynamical evolution of the system. Even for $q$ = 10 and $F$ = 3 (with $L$ = 50), when the set of influence includes with high probability some of the neighbors of the target agent and the agent $M$ trait values are not on the majority frequency of appearance (see Fig. 17), the latter succeeds in inducing a monoculture as the strength $\epsilon$ increases even when for low values of $\epsilon$ the system is strongly polarized. In particular, for $\epsilon \geq 1$, an almost global state with $< S > /A \geq 0.7$ is already induced, i.e., at least 70% of the society belongs to the biggest culture for all values of $q$ included. For $\epsilon$ = 1, we have min($p(i, M)$)

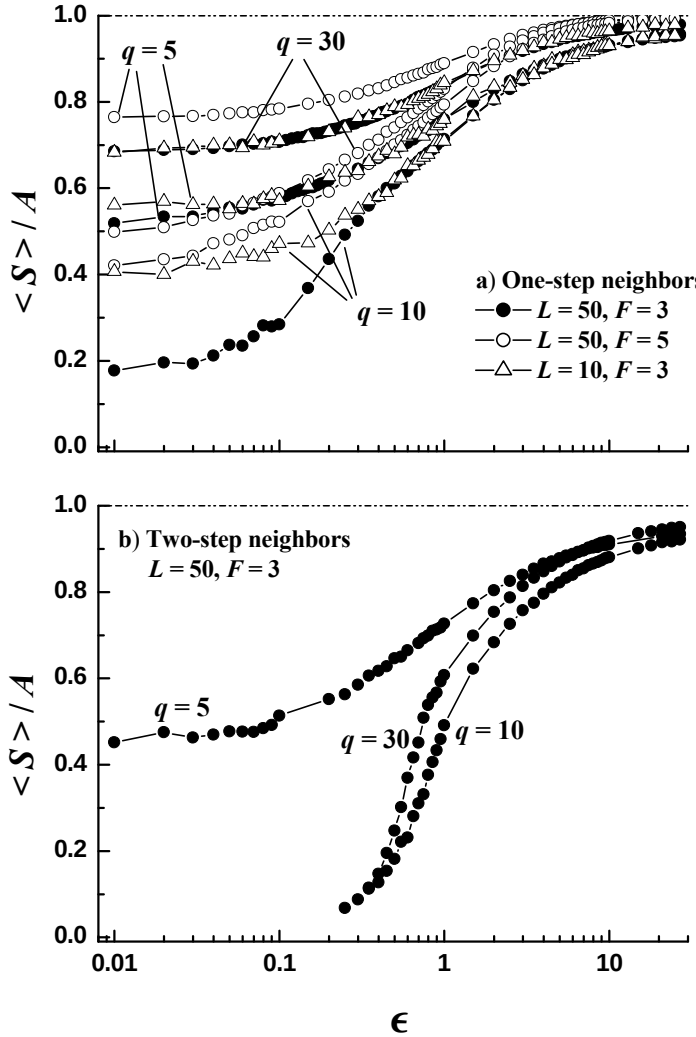


Figure 18. Final absorbing states in the Axelrod model with social influence as a function of the Mass Media strength $\epsilon$ for different values of $q$, $F$ and $L$. a) Calculation done including one-step neighbors (von Neumann neighborhood). b) Calculation done including two-step neighbors.

= 0.25 but the agent $M$ can also induce most of the society to belong to the bigger culture for any initial diversity $q$. The maximum value of $\epsilon$ included on Fig. 18 is $\epsilon$ = 27, which gives min($p_{is}$) = 0.90.

Moreover, we have also explored other dependencies. Panel a) include results for three groups of parameters. In black circles we show calculations with $F$ = 3 and $L$ = 50. To study the influence of the network size, calculations were also made with $L$ = 10 (shown with white triangles). We found no differences for $q$ = 40, while a very small deviation is obtained for $q$ = 5 and $\epsilon \leq 0.03$. The greatest differences are for $q$ = 10 at values of $\epsilon$ below 0.21. In this region of parameters, the values of $< S >$ are higher for lower network size $L$. Yet, for increasing $\epsilon$ calculations with $L$ = 10 and $L$ = 50 (with $F$ = 3) fully coincide.

Panel a) also includes calculations for $L$ = 50 and $F$ = 5 (white circles). When comparing with $L$ = 50 and $F$ = 3, one can see that for both $q$ = 5 and $q$ = 10, the values of $< S >$ are higher and then, as seen in Fig. 17 the increments in the number of features reinforces the monocultural final state of the system. Only for $q$ = 30 the values of $< S >$ are lower, but this result is in agreement with that obtained in Fig. 17, where the effect of the same parameter was investigated. Furthermore, when comparing in Fig. 18 panels a) and b) to study the influence of increasing neighborhood, the same results are obtained as when comparing Fig. 17 a) and b) for $L$ = 50 and $F$ = 3. In this case, the inclusion of two-steps neighbors in the social influence dynamics of the system strongly decreases the value of $S/A$ for the cases $q$ = 10 and 30.

## 4. Conclusion

We have explored the Axelrod model for the study of culture dissemination. Its achievements and drawbacks have been discussed. In particular, we have examined the extensions of the model that include an external vector field, fixed on time, which simulates Mass Media effects. Different works have been carried out to study this problem. Counterintuitively, it results that the Mass Media induces polarized regimes instead of full global final culture aligned to the external message.

We have also described in section 2. our work that explores a new way to include the external field with dyadic interactions and also in combination with a confidence parameter for the Mass Media. In our case, the Mass Media has the ability to influence all agents of the network with a probability of interaction that is proportional to an extra parameter $\epsilon$ (here interpreted as the Mass Media

strength). We have called this a *clever* Mass Media. The confidence parameter can also be experimentally estimated on real phenomena through official surveys and therefore it could be correlated with expected results when designing publicity campaigns. The results obtained indicate that for low values of the confidence the system closely reproduces the Axelrod's original results. Increasing confidence values induces the globalization of the final absorbing state, first orthogonal to the external vector and later, for sufficient high values of the confidence, aligned to the Mass Media information. These three phases have been recently obtained in other similar systems [42]. We consider important to perform further studies where the confidence value be an internal parameter with values defined by the internal status and dynamics of the system, as well as studying the dependence of the results obtained with respect to the network size and different noise rates.

Additionally, on section 3. we explored a new mechanism recently proposed to avoid the results of the original Axelrod model that are considered as limitations of the model: the social influence between agents. This mechanism was implemented in combination with clever Mass Media. Similar to the results discussed on Ref. [41] when this mechanism is implemented without the presence of the external field, the system is driven to a polarized final state for all initial diversities. Nevertheless, as far as our calculations have shown, the full polarized state is not attained when the Mass Media is present and a maximum value for cultural diversity is obtained. This maximum value seems to be independently of the Mass Media strength. Furthermore, we obtained that the number of final cultures also follows a power-law dependence when the social influence is at work, but the exponent value found here is lower than that reported for the original Axelrod model with dyadic interaction [23].

The model at non-zero temperature, representing errors when copying traits and in the formation of the social influence set for interaction was also addressed. Contrary to previous works where the noise is present on the whole society, we have included here noise effects only in those agents which are active according to the rules of the social interaction. This allowed us to reach well-defined final absorbing states and correspondingly a higher precision in the description of the noise effects. The results show that social influence makes the system dynamics more stable against the presence of noise and that the latter only has a marginal influence on the general qualitative picture obtained without any errors. It is however worth stressing that noise has in general a positive effect in the formation of monocultural final states, giving rise to global societies

for large enough values of it, independently of the other parameters ruling the size of the social influence and the strength of the mass media effect.

Moreover, the dynamics of the system is such that at low and high values of initial social diversity $q$, a global state is attained with a stronger dependency on the mass media strength at large $q$ values. In the first case ($q \sim 1$) the Mass Media is providing information that is already on the largest frequency of the society and then the results are rather trivial. For the other case ($q \gg 1$) the Mass Media successes in homogenizing the system through the mechanism represented by the additional probability to interact with any agent. The strong diversity isolates agents of the society from its neighbors and each of them becomes subject of influence from the external vector field. An interesting behavior was obtained for intermediate values of $q$, where the system dynamics attains a minimum in the size of the biggest monocultural cluster. At those values of $q$ the initial diversity is such that the mass media has to compete with a larger number of neighbors of the agent and thus its information is not necessary on the majority. Then, in this case the mass media fails to drive the system to an homogeneous cultural state. These situations resemble the sentence of anthropologist Gregory Bateson: "to produce a change it is necessary to be *different* but, at the same time, it is necessary to be *close enough* to be taken into account" [43]. We think that we have shown that when the local diversity fulfills this condition, the multicultural state is robust enough and the Mass Media fails to homogenize the system. However, we should add that increasing the mass media strength for a fixed network size always reinforces the monocultural state.

Finally, we have shown different calculations for higher values of agents' size ($F$). The increment of this parameter reinforces the global final state because it makes more probably the interaction of two agents through higher values of the cultural overlap between them. Consequently, the monocultural state becomes more robust for greater values of the initial diversity. For this reason, the critical value $q_c$ where the phase transition occurs when dyadic interaction is at work is higher. Additionally, the polarized state was found to be favored when the agents' neighborhood is increased. This result is a direct consequence of the high local diversity obtained when more neighbors are considered in the set of influence.

As for future research, we think that it would be interesting to conduct further studies to better explore the inter-relations between the dyadic interaction and social influence on a social system. It could be important to elucidate the robustness of the results discussed in this review.

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*Chapter 7*

# EFFECT OF MASS MEDIA ON SUICIDAL BEHAVIOR IN PATIENTS WITH PSYCHOTIC DISORDERS

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## Abstract

Mass media have the capacity of influencing behavior, including suicidal behavior in vulnerable individuals. An imitation effect has been demonstrated although some questions and some controversies persist concerning what makes certain people more vulnerable, what the exact mechanisms of the effect are, and what constitute the best protective steps. Moreover, much of the evidence which has been gathered lacks clear specifications in regard with psychiatric diagnoses, making it difficult to ascertain what role is played by psychosis in the process. In particular, the Internet has a huge potential for communication and recent reports suggest it may both benefit and hamper preventive strategies against suicide. Additionally, telepsychiatry, a model of care with clear connections with Internet is now being used with fairly good evidence of success. Suicidal behaviors may be approached by this modality but a number of difficulties have yet to be overcome. Controversial findings, frequent and rapid changes in the mass media and a lack of research studies on these issues preclude definitive conclusions.

Unfortunately, data are particularly scarce on the potential effects of mass media on suicidal behavior in patients with psychotic disorders. This is especially true for the Internet. To our knowledge, no research study has specifically addressed the effects of this medium on the suicidal behavior of psychotic patients. Available data and reflections by the authors are presented in this chapter which is also aimed at helping mental health professionals to orientate their patients on how to take advantage of mass media while not being damaged from them.

# Introduction

Suicide is a devastating outcome for several psychiatric conditions including schizophrenia, bipolar disorder and other psychotic disorders. While suicide rates for schizophrenia seem to be between 10% [1, 2] and 5% [3], an estimated 6%-15% of people with bipolar disorder commit suicide [4, 5]. Standardized mortality ratios (SMRs) allow for comparisons with the general population. Patients with schizophrenia have been reported to have between an 8- and a 13-fold increased risk of completing suicide than the general population [6, 7]. Bipolar disorder seems to even have a greater suicide risk. The SMR for suicide has been estimated to be 20 to 30 for patients with bipolar disorder [8] but data are not completely concordant and it could be as low as 10 [9].

The topic of the mass media, psychosis, and suicide, of course, occurs in the context of the relationship between psychiatry and the mass media – a relationship which has never been an easy one. Data from UK seem to indicate that psychiatry gets a particular bad press compared with medicine [10] and this no doubt extends to other countries as well. Cancer, for example, has some commonalities with schizophrenia and may be a good comparison element. Duckworth et al. (2003) compared schizophrenia and cancer coverage by newspapers from 1996 or 1997. Schizophrenia was mentioned in a metaphorical way in 28 percent of the articles while only 1 percent of articles referred to cancer in that manner [11]. What seems particularly regrettable is that while negative medical contents are centered on professionals, the focus changes to patients in the case of psychiatry [12].

Some authors have emphasized cultural differences regarding newspaper headlines about suicide [13, 14]. More recently, Huang & Priebe (2003) investigated articles on mental health care in the print media from an international perspective, including UK, USA and Australia. The tone of the articles, overall, was negative but there were slightly more positive articles in the USA and Australian media [15]. This perspective necessarily puts pressure on our patients with diverse negative consequences related to stigmatisation. At this point, stigma

is a major concern since it has several troublesome correlates such as provoking despair in patients and keeping them away from seeking treatment, while also prompting some of them into suicidal thoughts or behaviors. This is particularly relevant for the purpose of this chapter since schizophrenia and related chronic psychotic disorders are especially vulnerable to stigmatization processes. It has even been suggested that a relationship exists between stigma and suicide [16]. Eagles et al. (2003) investigated a group of outpatients with severe and persistent mental illness to see what could help patients when they felt suicidal. Not surprisingly, negative influences for these patients included the media and the stigma of psychiatric illness [17].

Mental illnesses are usually depicted in a negative way in mass media including newspapers, television and films which contribute to enhanced mental illness stigma. Negative media (newspaper and, particularly, television) reports have been shown to potentiate the desire for social distance towards people with schizophrenia [18]. However, only a very small percentage of the variance of social distance was explained in this study by media consumption [18]. In particular, people with schizophrenia are seen by citizens as unpredictable and dangerous [19]. Films also sometimes depict a degrading image of schizophrenia [20]. As Byrne has further pointed out (2003), the Internet is a combination of the best and the worst of print media (rapid, accessible, worldwide and uncontrolled), including images and sounds in addition to text [12]. The potentiality of this medium is therefore obviously enormous and it will certainly be important to investigate it scientifically.

The media influence not only public attitudes towards mental illness but also policy development. Hallam (2002) studied how English newspapers impact on the development of mental health policy. The author based her work in two famous cases; one of them, a case of suicide that occurred in London, in December 1992. Ben Silcock, a person with schizophrenia, climbed into the lions' den at London Zoo and was mauled by the animal. She analyzed the press coverage this suicide received for a period of 8 years and the published material's effects on policy decisions. Policy measures taken under the shadow of public preoccupations after these rare events resulted in additional constraints on people with mental health problems, have further stigmatized people with these illnesses and have put more exigencies on service professionals [21].

Considering the importance of media depictions of mental illness, exploring whether a change is taking place seems a relevant question. A recent study assessing a possible change in the quality of reporting of schizophrenia in UK national daily newspapers, between 1996 with 2005, found little evidence for this hypothesis, particularly in regard with the use of stigmatizing descriptors [22].

We have enough indications to suspect that media can influence the suicidal tendencies of patients with psychotic disorders; probably both in positive and negative ways. Some data also suggest that potential negative influences are not under control. This review documents the present level of knowledge regarding these issues with a special attention to generating hypotheses and improving our capacity to deal with these phenomena.

## Classical Mass Media and Suicidal Behavior

The influence of mass media on suicidal behavior has been a controversial issue for years although it has been extensively studied. The hypothesis suggesting that a suicide contagion may be transmitted through traditional mass media has repeatedly been reported. This so-called "Werther effect" refers to the wave of suicides that occurred after Goethe's publication of 'The Sorrows of Young Werther' [23]. Schmidtke & Häfner (1989) reviewed the influence of mass media on suicide and found evidence for imitation processes in proportion to the amount of detail of suicide methods and the degree of celebrity of the suicides [24]. On the contrary, an investigation of all US network television suicide news stories broadcast between 1973 and 1984 could not demonstrate a reliable association with the incidence of suicides during that period [25].

Several methodological problems may appear when investigating the effect of mass media on suicidal phenomena. For example, exposure to models may be age- and sex-specific and depend on size of coverage and audience or readership [13]. They and other authors have especially remarked the 'ecological fallacy' (interpretation of chance fluctuations as a media effect) as a frequent flaw in these type of studies [26, 27].

Several papers have explored the characteristics of both the model and the observer. According to Hawton & Williams (2002), younger people are most vulnerable to the influence of the media. Moreover, the impact of the media on suicidal behavior seems to be most likely when a method of suicide is specified or detailed, when it is portrayed dramatically or it is about a celebrity, and when the media stimulus or model and the observer are similar in terms of age, sex, and nationality [28]. Stack (2005) reported interesting information on nonfictional media. The presence of either an entertainment or political celebrity, and the focus on female suicide were more likely to be associated to a copycat effect. On the other hand, studies focusing on stories that stressed negative definitions of suicide or based on television stories (which receive less coverage than print stories) were less likely to find a copycat effect [29]. Pirkis et al. (2006) also investigated the

characteristics of media items in Australian newspapers and on radio and television news and current affairs shows between March 2000 and February 2001. Stronger effects were found for a context of multiple reports on suicide (versus occurring in isolation), television versus other media, and if they were about completed suicide. Finally, an increase in male suicides was associated with items about an individual's experience of suicide and opinion pieces, and an increase in female suicides was associated with items about mass- or murder-suicide [30]. Blood et al. (2007) recently presented data on the reporting of suicide in Australia which suggests that the media present an image of suicide skewed towards violent and unusual methods, and that newsworthiness of the stories is given priority over accuracy and ethics [31].

Recent reviews have given further support to the notion of a relationship between mass media and suicide. A causal association has been demonstrated between nonfictional media reporting of suicide (newspapers, television, and books) and actual suicide. This might also be the case of fictional media portrayal (films, television, music, and plays) but the evidence for this is more equivocal [32, 33]. Sudak & Sudak (2005) have also reviewed the literature on media-related suicide to conclude that there are an increased number of suicides as consequence of media portrayals of suicide that romanticize or dramatize the description of suicidal deaths [34]. A recent well designed study by Cheng et al. (2007) also showed that the extensive media reporting of the suicide of a celebrity was followed by an increase in suicide attempts [35]. Regrettably, as with most of the studies on this issue, the authors did not report on the psychiatric diagnoses of attempters. Due to the nature of the subject matter, of course, there have been (and will be) no randomized controlled trials of the subject and we must settle for the less reliable fruits of observational data.

The presence of positive impacts of mass media on suicidality may be even more difficult to investigate and the level of evidence is even more limited in this case [13]. Changes in the style of reporting might have a preventive effect. Although not without controversy, potentially beneficial effects of the media portrayal of suicidal behavior were demonstrated by O'Connor et al. (1999)[36]. Moreover, some reports have suggested an educational role for reports explaining the lethality of methods in the case for drugs whose potential lethality is not well-known such as, for example, paracetamol [26, 37].

## The Internet and Suicidal Behavior

A decade ago, some case reports suggested the potential for some 'suicide sites' to provoke or facilitate suicidal behaviors [38-40]. Baume et al. (1997) remarked on the ambivalence of some people and how vulnerable individuals were compelled by others to act on their suicidal plans [38]. Several papers have shown the presence of web forums on the Net which are clearly pro-suicide [41, 42] but, probably because of methodological difficulties, this phenomenon is still understudied and definitive conclusions about its dimensions cannot be reached at this point. This is especially true regarding psychotic patients. Disappointingly, data are not available about the incidence of cybersuicides (attempted or completed suicide influenced by the internet). This lack of data is particularly unfortunate when we consider the overall potential of the Internet. A Google search with the word 'Suicide' in September 2008 retrieved 90.100.000 entries. Interestingly, 1.510.000 entries appeared with the words 'Suicide & Psychosis', and 1.970.000 with the words 'Suicide' & 'Schizophrenia'.

A recent study has been the first one to demonstrate that Internet use was a predictor of (the incidence of) suicide among males, probably because males spent more time online than females [43]. Their findings suggest that Internet use and newspaper articles on suicide have a differential effect on suicide incidence in males and females. The authors covered a period of 218 months, from January 1987 to March 2005 in Japan, and were able to use information on Internet use available in Japan since 2001 (prevalence of household Internet use).

Mehlum (2000) explained several ways for a suicide contagion to happen through the Internet. First, many web sites present suicide as a solution to life's problems. Second, they may present details of methods for committing suicide. There exist really very few legal, technical, or financial obstacles to those who wish to provide the millions of internet users with detailed information on how to commit suicide. Third, discussion groups, which are increasingly interactive and sometimes created with a good purpose, are now frequently used as meeting places for people with severe depressive or other mental illness, particularly young people. These sites may work in both directions, as a place to share despair and suicidal thoughts that may be overcome with the help of others and as sites where these emotions may be fostered with the consequent suicide risk. These effects can occur, of course, over vast distances, complicating jurisdictional issues, and, in some cases, they may prompt Internet users into suicide pacts [44].

As Prior et al. (2004) remarked, there is not enough information detailing how frequently patients use the Internet, and whether there is actually a profile associated with individuals that use Internet to foster their suicide plans [45]. It

could be that individuals who access the Net are qualitatively different to other individuals [46]. Regrettably, we do not have data on whether psychotic patients access to the Net and what type of sites they visit. Perhaps some psychotic patients who find it difficult to express themselves or to feel understood in other domains, find the structure of the Internet a better fit to their communication needs, especially when it comes to expressing strong feelings.

A particular mode of cybersuicide is suicide pact. Suicide pacts have been known for years as a rare phenomenon [47] but now they seem to be occurring among people that do not know each other. Remarkably, they are able to attract extensive media attention. Fishbain & Aldrich (1985) studied suicide pacts, prior to the advent of the Internet, from an international perspective. Twenty suicide pacts (double suicides) from the Florida Dade County Medical Examiner's Office were identified. These data were compared using a standardized instrument to published suicide pact data from England, Japan, and Bangalore City, India. In this study, the frequency of suicide pacts was found to be greatest for Japan; lover pacts were found to be typical for Japan; spouse pacts were typical for Dade County and England; and friend pact frequency was greatest for Bangalore City. In addition, interestingly, it was found that suicide pact victims, in general, choose nonviolent suicide methods [48]. Whether these tendencies continue to hold true for people relating on the Internet remains to be determined.

A recent review by Recupero et al. (2008) classified sites as pro-, anti-, or neutral suicide sites. Suicide-neutral and anti-suicide sites occurred most frequently. However, 41 web pages were pro-suicide and were easily accessible. Detailed how-to instructions for unusual and lethal suicide methods were easily located through the searches [49]. According to Biddle et al. (2008), potential effects include [42]:

1. Negative effects
   - Web forums in which people are being encouraged to commit suicide as a problem solving strategy.
   - Sites or forums with information on lethal methods.
   - Chat rooms where people pressure to each other to commit suicide, idolize those who have completed suicide, and facilitate suicide pacts.
2. Positive effects
   - Sites advising people to seek help and providing support links. These sites may also allow people to express, share, and work through their despair.

- Sites that provide scientific information opening the possibility to get advice or encouraging potentially suicidal people to seek treatment.
- Internet based interventions to treat depression.
- Supportive message boards and web rings where people share a positive way of approaching suicidal thoughts.

Although very little information is available about a possible net effect of these influences, a net positive effect on suicide seems to be the case since, in England, rates of suicide among young (15-34 year old) men and women, the age groups that mostly use the internet, have been declining since the mid-1990s, a time when use of the internet has expanded rapidly [50].

## Psychotic Suicide and Mass Media

Data are particularly scarce on the potential effects of mass media on suicidal behavior in patients with psychotic disorders. To our knowledge, no study has specifically addressed this point.

One of the few papers indirectly assessing this issue was published by Fakhoury (2000). The author audited a British mental health helpline SANELINE (1996-1998) and, remarkably, showed data about users' diagnoses (55% depression and 31% for people with psychosis). The distribution by gender showed that for psychosis, more calls involved males than females while the opposite was true for depression [51]. However, validating information on the results of these calls was limited and, in any case, these data may not be applicable to other settings.

Although very little information is available, several characteristics of psychotic suicide suggest that this group of patients may be especially vulnerable to Internet effects. The majority of suicides in cases of schizophrenia occur in young patients, early in the course of the illness [3]. This is also true for bipolar disorders [52]. An increased risk has also been associated with higher IQ and good premorbid function as well as with developing schizophrenia after having achieved academically [53]. Moreover, according to these authors, the availability of a method may be crucial in suicidal thoughts progressing into suicidal behaviors. The presence of depressive symptoms, and particularly hopelessness, together with fewer negative symptoms seem to be contributors to this risk [54-57]. Finally, cluster suicidal behaviors have been described in psychiatric patients including patients with schizophrenia [58].

These data bring us a picture of a vulnerable individual, somewhat similar to those that have been shown to be prone to cybersuicides. Family difficulties and perceived stigmatization have additionally been reported as possible contributing factors to suicide in patients with schizophrenia [16]. Stigma fostered by mass media including Internet and a higher accessibility of lethal methods are probably also contributing factors. Some authors have already pointed that restricting access to lethal methods and media reporting guidelines are important strategies to prevent suicide in patients with schizophrenia [59].

Imitative behavior has already been demonstrated for psychotic suicide. O'Donnell et al. (1996) interviewed 20 individuals, mostly patients with schizophrenia, who had attempted suicide by jumping in front of a railway train in London. In most cases the act had been impulsive and was characterized by an extremely high level of suicidal intent. For some of them, the idea of the underground as method of suicide came from knowing another inpatient who had used this method [60].

On the other hand, psychotic patients may have unique characteristics in regard to suicide. A striking resemblance between suicide pacts, which have already been mentioned as a particular issue in regard with Internet influences, and folie à deux is probably one of them. Greenberg (1956) published a very interesting review on the relationship between Folie à deux and crime. He reported several examples, some of them classical examples from the 19$^{th}$ century, of the tendency of such psychotic states to spread beyond the original (usually familial) group. Interestingly, suicide is closely related to murder in this setting. According to his review, a paranoid patient, particularly someone diagnosed as delusional disorder, may be particularly prone to induce somebody else's suicide. The schizophrenic contagion is limited to those closest to him but the paranoid fear coming from the patient with delusional disorder spreads beyond and the patient finds his defenders in the press and public [61]. We could question whether similar phenomena might be fostered by the Internet.

A more recent case report and a review of the literature have been published by Salih (1981). A case of folie à deux affecting two women friends who presented as a suicide pact (successfully treated) is described. Again, his review of the relevant literature revealed consistent theoretical similarities between folie à deux and suicidal pacts suggesting that the psychotic condition would precipitate the suicidal pact [62].

The phenomenon of suicide pacts and the Internet has been reviewed by Rajagopal (2004) after 9 deaths in Japan, in October 2004, apparently in two suicide pacts (seven suicides in one pact and two in the other). Instead of the usual

close relationships held by the victims, here, the pacts had been planned by suicide websites [63].

Suicide pacts are a rare phenomenon, constituting less than 1% of the total number of suicides [47]. Just as in some suicide pacts where one person instigates the plan, in folie à deux the delusion is characteristically imposed by the dominant member of the relationship on to the other person. Scientific literature on cybersuicide mainly pertains to solitary suicides, and little information exists about the internet and suicide pacts. A referential study by Brown & Barraclough (1999) showed that mental disorder was present in half, and medical illness in one-third of suicide pacts Most interestingly, they gave data on diagnoses and showed that schizophrenia and manic depression were, by far (50 times), less frequent than depression. However, folie à deux could be of particular relevance in this setting. Although not fully meeting criteria for this disorder, five pacts were provoked by delusions, or over-valued ideas, of disease or financial ruin in one partner, and apparently shared by the other [64].

## Internet Therapeutical Potential for Suicide Prevention in Psychotic Patients

There are reasons to believe that the Internet can be a useful resource to aid a psychotic patient in getting help. A major effect of the Internet on psychiatry was already anticipated a decade ago [65]. These authors remarked on its great potential in psychiatric education, clinical care, research, and administration, but also pointed out that major adjustments in individual and organizational expectations and responses would be needed.

Some authors have reported cases in which threats of suicide were made somewhat indirectly and discovered over the Internet [66]. It could even be the case that Internet characteristics such as anonymity could help some people to communicate their suicidal plans. Along this line, and without entering on obvious ethical and legal implications, an anecdotal report by Neimark et al. (2006) showed the possibility of obtaining relevant information on suicide risk assessment through the Internet although patients may be trying to hide it [67]. Prasad et al. (2001) looked for the information and support available for people with suicidal tendencies. They found information, and less often, sites that offered e-mail support and online discussions [68].

We have already mentioned the woeful lack of careful scientific information on this issue. One of the few related studies was done by Timms et al. (2005) that assessed people's online responses (> 4000) towards public education materials

launched by the Royal College of Psychiatrists ('Help is at Hand' leaflets), and the acceptability and usefulness of information about mental health on the College website. Responses were globally positive but some negative responses (such as an augmentation of feelings of despair) were also found [69].

There are several guidelines for the media that should help to prevent 'copycat' suicide. A recent review of these guidelines showed noticeable similarities in approach, and noted that, without exception, all guidelines suggest avoiding specific and explicit detail about the suicide method (and location) [70]. Although these guidelines have not yet been scientifically evaluated, they have enough face validity to support their use. Several agencies have recently worked together in consensus guidelines that are now available. These agencies are the American Foundation for Suicide Prevention, the American Association of Suicidology, the Annenberg Public Policy Center, the Office of the Surgeon General, the Centers for Disease Control, the National Institute of Mental Health (NIMH), the Substance Abuse Mental Health Services Administration (SAMHSA), the World Health Organization (W.H.O.), the National Swedish Center for Suicide Research and the New Zealand Youth Suicide Prevention Strategy groups (available at several sites such as www.afsp.org or http://www.nimh.nih.gov/health/topics/suicide-prevention/reporting-on-suicide-recommendations-for-the-media.shtml). However, to our knowledge, no specific guidelines have been developed for specific illnesses such as schizophrenia, bipolar disorder or related psychoses.

We still do not know whether an adequate media portrayal of suicide events could help to reduce suicidal behavior. In fact, contagion effects are probably impossible to eradicate, but this should not prevent professionals from implementing efforts in this direction.

Restricting access to lethal methods reduces suicide rates [71]. However, we probably need to design specific interventions for psychotic patients. During a 4-year period, Hunt et al (2006) studied a consecutive series of suicides by people in contact with mental health services in England and Wales and showed how suicide methods and patients' characteristics vary according to diagnosis [72]. Stigma is a crucial issue. Destigmatisation to mental illness as well as suicide should be addressed. However, approaching suicide stigma may be a very difficult task since stigma associated to suicide may somewhat prevent some people from committing it [73]. Interventions among families, mental health professionals and church activists aimed at decreasing the stigma associated with mental illness and suicide may contribute to the reduction of deaths of psychotic patients by suicide [59].

Although, to our knowledge, no study has demonstrated that blacking out certain pro-suicide sites could have a preventive effect, this line of endeavor should also be pursued in the future. Meanwhile, mental health workers and researchers cannot ignore the potentiality of such a powerful instrument and several actions can already be implemented (Table 1).

Telemental health has now been present for decades and seems to be equivalent to face-to-face treatment. A recent paper by O'Reilly et al. (2007) has shown that psychiatric consultation and short-term follow-up can be as effective when delivered by telepsychiatry as when provided face to face [74]. A pioneer study showed that telepsychiatry (videoconsultation in this case) can be an acceptable and reliable method to assess patients with schizophrenia through well-known scales such as BPRS, SANS and SAPS [75].

**Table 1. Recommendations to improve mass media-psychiatry interaction**

1. A closer collaboration between the psychiatric profession and the mass media is required.
2. Training courses for careers in the media should include adequate training regarding suicidality and suicide. Post-graduate training should also include information delivered by expert mental health professionals involved in suicide prevention, including that with psychotic patients.
3. Psychiatric training must include advanced education on this topic.
4. Inappropriate media reports of suicidal behavior should be highlighted and addressed.
5. Specific internet sites should be created to reach out to psychotic and other patients with suicide risk.
6. Mental health professionals should ask their psychotic patients about Internet use and facilitate their reaching helpful sites.
7. Research studies on the use of the Internet by psychotic patients and specific interventions aimed at reducing suicide risk are needed.
8. Internet potential for psychiatric education addressed to general public and mental health workers should be developed by public agencies.

Remote video care has been extensively studied in The Department of Veterans Affairs, with applications on multiple mental health diagnoses including schizophrenia [76]. This agency has recently considered suicide prevention a major priority and is trying to develop interventions through different telehealth modalities [76]. These authors have published a comprehensive review on the legal issues involved in remote assessment and interventions on suicidality. Major

concerns are licensing requirements for remote delivery of care, legal procedures for involuntary detainment and commitment of potentially harmful patients, and liability questions (particularly abandonment and negligence issues). They conclude their review with a compilation of best practices which may well help orient future lines of both clinical and research endeavors [76]. Other agencies are also applying telepsychiatry to schizophrenia and other psychotic disorders. This is the case of the Schizophrenia Research Foundation (SCARF), at Chennai (India). It is remarkable that these initiatives are not without difficulties including an initial reluctance on the part of patients to use this facility [77]. Finally, a recent study used an Internet-delivered questionnaire to obtain information about suicide risk from parents of children and adolescents with a diagnosis of bipolar disorder [78]. Initiatives like these are now opening this field with promising results.

## Internet Resources

Psychotic patients may benefit from online crisis interventions, counseling opportunities, or help with concrete services that are now widely available. Clinicians should be aware of these resources in order to work with them effectively and be helpful to patients who stand to benefit from these services

Assistance may be found through several web-pages:

1. Specific for suicide prevention (crisis centres for suicide prevention) (Table 2):
    a. http://www.hopeline.com/. The Kristin Brooks Hope Center (KBHC) runs a national 1-800-SUICIDE hotline. This institution is working on a Program Psychiatric Emergency Response Network (PERN) that will connect the crisis center to community resources called Public Safety Answering Points (PSAPS) which include specific emergency psychiatric rescue teams. To our knowledge, no specific programs have been developed for psychotic patients.
    b. http://www.suicideinfo.ca/csp/go.aspx?tabid=77 and http://www.casp-acps.ca/ crisiscentres.asp. The location of Canadian crisis centres is provided for all provinces.
    c. http://www.befrienders.org/. It is a 24-hour worldwide e-mail service delivered by the Samaritans. They mainly provide emotional support. Users can choose between centers with an email service or a full list of helplines in their own country.

d. http://www.metanoia.org/suicide. It contains texts for suicidal persons to read.
e. http://www.livingisforeveryone.com.au/. LIFE (Living is For Everyone). It provides evidences and resources for preventing suicide in Australia, addressed to people in the community who are involved in suicide prevention activities.

2. Mental health, non-specific for suicide (Table 3)
   a. http://psychcentral.com/. They give information on suicide and recommend contacting the National Suicide Prevention Lifeline toll-free at 800-273-8255. Additional crisis and suicide hotlines can be found in this web page.
   b. http://www.nami.org/. National Alliance on Mental Illness. Connection to discussion groups, information, a blog etc…
   c. http://www.nimh.nih.gov/health/publications/schizophrenia/ complete-publication.shtml. Website of the National Institute of Mental Health. It offers information for patients and families about schizophrenia, its symptoms, treatment and prognosis.
   d. http://www.who.int/mental_health/management/schizophrenia/ en/. Brief information about schizophrenia. Data are presented in an optimistic tone.
   e. http://www.mentalhelp.net/poc/center_index.php?id=7&cn=7. Broad information on schizophrenia, easily understandable with a quite neutral focus.
3. Psychosis sites (Table 4)
   a. http://www.reachoutpsychosis.com/psychosishelp/. A highly recommendable program of the British Columbia Schizophrenia Society. They look for educating young people and their parents about psychosis and reducing the stigma associated to these illnesses. This type of initiative may be useful for suicide prevention. They also refer to the corresponding Crisis Intervention & Suicide Prevention Centre of British Columbia, a volunteer driven organization. Interestingly, it has a link to the corresponding Early Psychosis Intervention Program websites.
   b. http://www.schizophrenia.com/. This site provides for information, support and education. They also include blogs and discussion forums. It has a Preventing Suicide resource (http://www. schizophrenia.com/ suicide.html) that is very recommendable with clear and understandable information including, among others, a very interesting NAMI video (Coping with Suicidal Behavior)

(http://video.google.com/videoplay?docid=-1676754491725405608&hl=es).

c. HealthyPlace.com - Schizophrenia and Suicide. High-quality information with links into specific topics on suicidal risk of patients with schizophrenia.
d. Suicide for Mental Healthcare Service Users. Irish program with a link to a handbook in pdf format with a chapter on suicide risk factors for patients with schizophrenia.
e. http://www.nimh.nih.gov/health/publications/bipolar-disorder/complete-publication.shtml. General information about bipolar disorder for patients and families with a small part devoted to the detection of suicide risk in patients with bipolar disorders.
f. http://www.mentalhelp.net/poc/center_index.php?id=4&cn=4. Broad document with very comprehensive information about diverse topics such as etiology, symptomatology, treatment and prognosis of bipolar disorders that also offers a specific area on suicide risk.

4. Worldwide organizations providing professional information (Table 5)
   - http://www.suicidology.org/. Website of the American Association of Suicidology (AAS). Website focused on the prevention strategies, orientated to health professionals with high quality bibliography references.
   - http://www.iasp.info/. Website of the International Association for Suicide Prevention (IASP). It has extensive contents with general information about suicide and mental health and it also offers a repertory of help resources such as telephone numbers in different countries of the world for people with suicidal intentions.
   - http://www.afsp.org/. Website of the American Foundation for Suicide Prevention. It has the double purpose of supporting for education and spread out its prevention campaigns.
   - http://www.sprc.org/suicide_prev_basics/glossary.asp. Website of the Suicide Prevention Resource Center. It includes training programs on suicide prevention for professionals.
5. List Serves that can be interesting to people who work in suicide prevention (Table 6)
   - 1-800-SUICIDE-subscribe@yahoogroups.com
     This group is exclusively for those crisis centers included in the National Hopeline Network to alert them of media events, problems, solutions and funding opportunities.
   - Crisis-intervention-subscribe@yahoogroups.com

The main purpose of this group is to facilitate the exchange of information and ideas among staff and volunteers of hotlines, crisis intervention centers, suicide prevention services, etc.

- FF0FSuicides-subscribe@yahoogroups.com
  The Friends of Families of Suicides (FFOS) runs this e-mail support group for those whose lives have been affected by suicide. They offer information and support to people (just adults) from different English-speaking countries.
- Suicidology-subscribe@yahoogroups.com
  The Suicidology group is a research information network. It is especially dedicated to mental health professionals but is also available to all the medical community and other people interested in suicide research and prevention.
- Suicidology2-subscribe@yahoogroups.com
  Suicidology 2 is a discussion group which provides a forum for professionals and others to discuss suicide research and issues. It is a partner group of Suicidology, a restricted research group.

6. Pro-suicide sites
   - Pro- suicide and how- to suicide web pages are very few when compared with those helpful sites available in the Net for those people with suicidal ideation that may seek for support. However, they are highly accessible and may be determinant on ambivalent patients' final decisions. Two of the most significant sites are 'The Church of euthanasia' (http://www.churcho *feu*thanasia.org/) and 'A practical guide to suicide' (http://www.Francesfarmers revenge.com/ stuff/suicideguide.htm). The recent review by Recupero et al. (2008) found up to 41 pro-suicide sites [49].

Web Forums gather suicidal people that communicate to each other with endless potential interactions. Pro- and anti- suicide attitudes come together and sometimes yield a more than anecdotal suicide pact or different types of cluster suicides.

**Table 2. Specific sites for suicide prevention and support**

| |
|---|
| • http://www.hopeline.com/ |
| • http://www.casp-acps.ca/crisiscentres.asp |
| • http://www.befrienders.org/ |
| • http://www.metanoia.org/suicide. |
| • http://www.livingisforeveryone.com.au/ |

**Table 3. Mental health sites**

| |
|---|
| • http://psychcentral.com/ http://www.nami.org/<br>• http://www.nimh.nih.gov/health/publications/schizophrenia/complete-publication.shtml<br>• http://www.who.int/mental_health/management/schizophrenia/en/<br>• http://www.mentalhelp.net/poc/center_index.php?id=7&cn=7 |

**Table 4. Psychosis sites**

| |
|---|
| • http://www.reachoutpsychosis.com/psychosishelp/<br>• http://www.schizophrenia.com/ HealthyPlace.com - Schizophrenia and Suicide Suicide for Mental Healthcare Service Users<br>• http://www.nimh.nih.gov/health/publications/bipolar-disorder/complete-publication.shtml<br>• http://www.mentalhelp.net/poc/center_index.php?id=4&cn=4. |

**Table 5. Worldwide organizations providing professional information**

| |
|---|
| • http://www.suicidology.org/<br>• http://www.iasp.info/<br>• http://www.afsp.org/<br>• http://www.sprc.org/suicide_prev_basics/glossary.asp |

**Table 6. List Serves for people who work in suicide prevention**

| |
|---|
| • 1-800-SUICIDE-subscribe@yahoogroups.com<br>• Crisis-intervention-subscribe@yahoogroups.com<br>• FF0FSuicides-subscribe@yahoogroups.com<br>• Suicidology-subscribe@yahoogroups.com<br>• Suicidology2-subscribe@yahoogroups.com |

## Conclusion

Sensationalized descriptions or mass media reports of suicide deaths by famous people probably contribute meaningfully to suicide contagion (copycat suicides). On the other hand, appropriate coverage of suicide acts may help to educate the public, and help prevent potentially suicidal patients from attempting or committing suicide. In particular, the Internet, with its increasingly high level of availability and burgeoning repository of information and opinion, probably

has the greatest paradoxical potentiality of helping patients in a suicidal crisis or prompting vulnerable patients into suicide.

Very little specific information is available on the potentiality of mass media, and particularly Internet, to promote or prevent suicidal behaviors in patients with psychotic disorders. Available data are promising but clinicians should be aware of the potential interactions between mass media and their patients, and researchers should make an effort to overcome methodological difficulties in order to explore this field.

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