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Social Cognitive Theory and Mass Media Effects

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Introduction

Bandura's social cognitive theory is one of the most highly influential and widely celebrated theories in the field of social psychology. Thus, it is no surprise that its influence has extended into multiple fields, including communication and especially the study of media effects. Still, despite the enthusiasm with which media scholars have embraced social cognitive theory, its integration into media research is still in its infancy. The purpose of this chapter is first, to lay out the historical background and basic tenets of social cognitive theory. We will then explore the ways in which media effects scholars have integrated it into their research and consider the ways in which scholars might build on the existing foundation of social cognitive theory-based media research to better illuminate media effects processes and outcomes.

Historical Background

In the early 1940s, at the height of the behaviorist movement in psychology, behaviorist theories, like classical conditioning, assumed that external stimuli were the primary influence on human functioning with internal processes serving merely to transmit behavior. Around this time, however, in a paradigmatic shift, American psychologists introduced theories of social learning that rejected behaviorist notions of associationism as the primary source of behavioral motivation in favor of drive reduction principles. Despite the appeal of these approaches, though, these theories failed to explain how individuals initiated novel behaviors or why they imitated the actions of others even when not directly reinforced. In 1963, Bandura and Walters broadened the frontiers of traditional social learning theories with the principles of social modeling, observational learning, and vicarious reinforcement. Two decades later, Bandura (1986) advanced a model of human functioning that accorded cognitive, vicarious, self regulatory, and self reflective processes central roles in the process of human adaptation and change.

At this point, Bandura relabeled his theory from social learning to social "cognitive" both to distance it from contemporary social learning theories and to emphasize the role of cognition in people's capability to construct reality, self-regulate, encode information, and act. In social cognitive theory, people are seen as self-organizing, proactive, self-reflecting, and self-regulating rather than as simply reactive organisms shaped by environmental forces or driven by basic inner impulses. For Bandura, introspection is critical to predicting the influence of environmental outcomes on behavior as introspection is the mechanism by which people make sense of their psychological processes. Social cognitive theory also diverges from theories of behavior that privilege biological factors, which tend to ignore the social and technological innovations that create environmental selection pressures for adaptation (Bussey & Bandura, 1999). Instead, social cognitive theory espouses a bidirectional influence in which evolutionary pressures alter human development such that people can create complex environmental innovations, which in turn create selection pressures for the evolution of specialized biological systems for functional consciousness, language, and symbolic communication. Thus, social cognitive theory proposes that human functioning is the product of reciprocal determinism, or the dynamic interplay of (a) personal factors (e.g., cognition, affect); (b) behavior; and (c) environmental influences, which interact to influence human behavior (Bandura, 1986).

Deconstructing Social Cognitive Theory

Given the breadth of social cognitive theory and the interconnectedness among its concepts, it can often be difficult to distill into a simple explication. Below, we discuss the four cornerstones of the theory. The first two – human agency and human capabilities – might be viewed as the foundation on which social learning may develop. The third element – vicarious

learning – captures the process through which observation learning takes place, and the final element – self-efficacy – is the element that underlies the enactment of those learned behaviors.

Human Agency

Social cognitive theory is rooted in the notion of human agency, which suggests that individuals are proactively engaged in their own development and that they are able to exercise a measure of control over their thoughts, feelings, and actions (Bandura, 1986). Agency operates through three modes. *Individual agency* is exercised when one's own influence is brought to bear on one's functioning and environment. People may also obtain desired outcomes by *proxy agency*, whereby another person secures benefits for the individual. Finally, people exercise *collective agency* when they work together to advance common interests. Additionally, agency has four core properties: intentionality, forethought, self-reactiveness, and self-reflectiveness (Bandura, 2006). *Intentionality* refers to the creation of and engagement in plans and strategies by which people realize predetermined intentions to act. *Forethought* is the property whereby people anticipate outcomes of their actions. S*elf-reactiveness* is the property whereby individuals construct and regulate the appropriate courses of action. Finally, through *self-reflectiveness,* people reflect on their capabilities, the soundness of their thoughts and actions, and the meaning of their pursuits.

Human Capabilities

Related to the properties of agency are the capabilities—symbolization, forethought, self-regulation, self-reflection, and vicarious learning—that provide the cognitive means by which people influence their destiny. More specifically, humans possess the capacity to symbolize, by which they extract meaning from their environment, construct guides for action, gain knowledge by reflective thought, communicate with others over distance in time and space, and store

information (Bandura, 1986). Symbolization also allows people to engage in forethought, by which they plan action and anticipate its consequences. People self-reflect by meta-cognitively examining their functioning, which allows them to make sense of experiences, self-evaluate, and judge their capability to accomplish tasks. Further, this self-reflection is motivated by both the long and short term goals and challenges that people set (Bandura, 1986, 2001). These two types of goals work together — short term goals provide motivation to take the incremental steps leading, over time, to the accomplishment of long-term goals. Through self-regulation, people can adjust their behavior to both set and meet their short and long-term goals (see Zimmerman, 2000). Finally, vicarious learning, in which observations are symbolically coded and used as guides for future action, permits individuals to learn novel behaviors without the trial and error of performing them. This capability is discussed in greater detail below.

Vicarious Learning

Social cogntive theory's hallmark is its articulation of the functions and processes of vicarious learning (Bandura, 1986, 2002). That is, by observing the behaviors of others, an individual can develop rules to guide his or her subsequent behavior. Observational learning is governed by the processes of attention, retention, production, and motivation. First, an individual must *attend to*, or selectively observe, the actions of a model. Attention is influenced by characteristics of the modeled behavior (e.g., complexity), the model (e.g., attractiveness, similarity), and the observer (e.g., cognitive capabilities). Observed behaviors can be reproduced only if they are *retained* in memory, a process influenced by symbolic coding, cognitive organization, rehearsal, and cognitive skills. *Production* focuses on translating the symbolic representation of the observed behavior into action. This process is influenced by representational guidance (e.g., response production, guided enactment), corrective adjustment

(e.g., monitoring of enactments, feedback), and the observer's capabilities and related subskills. Finally, *motivational processes* help determine whether behaviors are enacted based on the nature of the reinforcement. Reinforcement may come from feedback generated by one's behavior, the observed feedback given to others, or internal incentives, and may differ in valence (positive or negative). Reinforcement is related to another key aspect of social cognitive theory – outcome expectancies. Outcome expectancies are the judgments of the consequences associated with a behavior. Outcomes may be physical, social, or self-evaluative in nature, and are usually associated with a positive or negative valence (Bandura, 1986, 2001).

Self-efficacy

Although one might learn about possible desirable behaviors from observing others, Bandura (1997) argues that those behaviors will not be enacted unless an individual possesses the self-efficacy to do so. Self-efficacy beliefs are judgments that individuals hold about their capabilities to perform a behavior at designated levels. Importantly, Bandura argues that "people's level of motivation, affective states, and actions are based more on what they believe than on what is objectively true" (1997, p. 2). For this reason, self-efficacy beliefs are better predictors of people's accomplishments than their previous attainments, knowledge, or skills as such beliefs are associated with goal-related effort, persistence, and resilience in the face of adversity. Self-efficacy beliefs are sensitive to contextual factors, such as the regulation of one's motivation, thought processes, affective states, actions, or environmental conditions. These beliefs are often associated with outcome expectancies. More specifically, self-efficacy helps foster the outcome one expects: confident people anticipate successful outcomes, whereas the opposite is true of those lacking confidence.

The influence of self-efficacy on the accomplishment of a task, however, does have its limits. High self-efficacy will not influence behavior when people lack the resources to undertake an activity, believe the social constraints of prejudicially structured systems will prohibit them from reaching desired outcomes, or if they do not value the expected outcome. Furthermore, people cannot accomplish tasks beyond their capabilities simply by believing they can; efficacy will not produce a competent performance in the absence of requisite skills. These factors notwithstanding, a wealth of research shows that self-efficacy can affect motivation, performance, and attainment across a range of fields, such as life-course development, education, health, psychopathology, athletics, business, and international affairs (Bandura, 1995, 1997; Pajares, 1997; Pajares & Urdan, 2006; Stajkovic & Luthans 1998).

Given the importance of self-efficacy beliefs in the generation of behavior, it is important to consider how such beliefs might develop. In fact, there appear to be four sources of information that help to form self-efficacy beliefs. The most influential source is *mastery experience*, in which the formation of self-efficacy beliefs is intuitive: individuals engage in activities, interpret the results of their behavior, and use their interpretations to develop beliefs about their capability to engage in subsequent activities. Outcomes interpreted as successful raise self-efficacy; those interpreted as failures lower it.

People also form self-efficacy beliefs through the *vicarious experience* of observing others perform behaviors. Social modeling exerts an especially powerful effect on self-efficacy beliefs when people observe a model similar to themselves. Observing similar others succeed can enhance individuals' beliefs about their own capabilities ("If they can do it, so can I") and motivate them to perform the task. Conversely, watching similar models fail can undermine observers' beliefs about their own capability to succeed (Schunk, 1987). Model similarity is most

influential for those who are uncertain about their performance capabilities, such as those who lack task familiarity and information to use in judging their self-efficacy or those who have experienced past difficulties (Bandura, 1986; Schunk, 1987; Schunk & Meece, 2006). Of note, when people perceive the model's capability as highly divergent from their own, the influence of vicarious experience is greatly minimized.

Individuals also create and develop self-efficacy beliefs as a result of *verbal persuasion*, or the verbal judgments that others provide. Effective persuaders must cultivate other people's beliefs in their capabilities while simultaneously ensuring that the envisioned success is attainable. Although positive persuasions may encourage and empower a person, negative persuasions can defeat and weaken self-efficacy beliefs. In fact, it is usually easier to weaken self-efficacy beliefs through criticism than to strengthen such beliefs through encouragement.

Finally, people can gauge their self-efficacy by the *physiological and emotional states* (e.g., anxiety, stress, and arousal) that they experience as they contemplate an action. Strong emotional reactions to a task, like excitement or fear, provide cues about the anticipated success or failure of the outcome. Focusing on negative physiological cues, negative thoughts and fears can not only lower self-efficacy perceptions but they can also trigger additional stress that contribute to an inadequate performance. Thus, one way to raise self-efficacy beliefs is to improve physical and emotional well-being and reduce negative emotional states. Further, because individuals have the capability to alter their own thinking and feeling, enhanced self-efficacy beliefs can, in turn, powerfully influence the physiological states themselves. Based on the selection, integration, interpretation, and recollection of information from these four sources of information about self-efficacy, as well as the rules employed for weighting and integrating them, self-efficacy beliefs are ultimately formed.

Social Cognitive Theory and the Study of Media Effects

The capacity of humans to think abstractly or symbolically positions the media as an important source of information to facilitate observational learning and increase self-efficacy to perform given behaviors (Bandura, 1994). In turn, social cognitive theory offers a vantage point from which to examine the influence of mediated content on audiences' attitudes and behaviors (Bandura, 2001, 2002, 2004). Drawing from the above theoretical explication, social cognitive theory suggests that, in essence, for mediated content to positively affect audience members' behaviors, the audience must pay attention to attractive or similar models realistically performing relevant behaviors. Models engaging in positive behaviors should be positively reinforced, whereas those engaging in negative behaviors should be negatively reinforced (Austin & Meili, 1994; Bandura, 2001; Stiff, 1986). In such cases, mediated depictions of behavior may be instrumental in bringing about positive personal and social changes, although alternative pairings of behaviors and reinforcements can prove to be problematic (Bandura, 2001, 2002, 2004; Nabi & Clark, 2008). As we consider the literature on the intersection between media and social cognitive theory, it is evident that the theory has been used to explain both unintended (and usually negative) as well as intended (and usually positive) effects of media depictions. We address both in turn below.

Social Cognitive Theory-Based Examinations of Unintended Media Effects

Throughout much of the history of media effects research, great attention has been placed on the possible negative consequences media content might have on audiences' attitudes and behaviors (see Bryant & Zillmann, this volume). Thus, it should come as no surprise, given the discussion above, that social cognitive theory would be tapped to try to explain why such behavioral effects might emerge. Given that the media landscape is populated with attractive,

likable characters often engaging in risky or antisocial behaviors, it is only logical to presume that audiences might model such behaviors through the processes described above. Thus, social cognitive theory is often cited in media effects literature as a framework to explain such unintended and negative media effects. For example, Gidwani, Sobol, DeJong, Perrin, and Gortmaker (2002) argued that the positive correlation between television viewing and the initiation of youth smoking was a result of the rarity with which television portrays the negative consequences of smoking. Similarly, Harrison and Cantor (1997) theorized that the positive relationship between exposure to women's magazines and women's drive for thinness is a function of the tendency for women's magazines to link thinness to positive consequences, thus engendering extrinsic motivation for dietary behavior. To be clear, these studies did not test social cognitive theory directly, but rather drew from its predictions to presume how it would explain the effects identified in their research.

Similarly, social cognitive theory is frequently referenced as a framework that might explain the possible effects of patterns of media depictions regarding, for example, sex or race, identified through content analyses (e.g. Aubrey, 2004; Graves, 1999; Mastro & Stern, 2003). Although these predictions are in line with the theory, these studies do not test these predictions, but rather, suggests possible effects to be tested with additional empirical work (see Nabi & Clark, 2008, for a similar critique).

Although some research efforts have been engaged to examine media effects based on the tenets of social cognitive theory, most such studies tend to focus on individual aspects of the theory rather than on all of the components necessary to establish a true test of the theory. For instance, Farrar (2006) showed study participants teenage dramas in which characters engaged in either safe sex or unprotected sex. However, positive or negative reinforcements associated with

these behaviors were not included, though the author noted that the absence of punishment could potentially serve as a reward. Still other studies hoping to test social cognitive theory often measure constructs in ways that may not be fully consistent with the theory. For example, in a longitudinal study of the effects of TV viewing on initiation of sexual intercourse among adolescents, Martino, Collins, Kanouse, Elliott, and Berry (2005) found that those who watched more sexual content on TV had higher self-efficacy related to the practice of safe sex and fewer negative expectations of engaging in sexual intercourse, both of which were positively associated with intent to initiate sex. Although on its face, it seems to be well-rooted in social cognitive theory, as Nabi and Clark (2008) point out, this study tested general exposure to sexually-oriented content rather than specific depictions of positive or negative consequences of sex. Thus, Martino et al.'s media measure was more consistent with what one might expect of a study grounded in cultivation theory, in which gradual, cumulative exposure is the predicted mechanism of effect (see Morgan, this volume) rather than social cognitive theory.

Thus, it appears that media scholars find great utility in social cognitive theory as an explanation for unintended, negative effects of media exposure, but the research often falls short of offering rigorous tests of the processes as conceptualized by the theory. More recent empirical investigations have made efforts to offer more appropriate tests of the theory through experiments in which media content is manipulated in theoretically consistent ways, though the results have not been consistent. Eyal and Kunkel (2008) presented clips of popular teen television programs portraying either positive or negative consequences of premarital sex and found that, consistent with social cognitive theory, exposure to portrayals of negative consequences led to more negative attitudes toward the behavior and harsher moral judgments of characters who modeled that behavior. Conversely, those who viewed positive consequences of

sex did not report more positive attitudes toward it. However, Nabi and Clark (2008), in their theoretical comparison of social cognitive theory and schema theory (Fiske & Taylor, 1991), manipulated depictions of one night stands to reflect either positive or negative consequences, and found, contrary to social cognitive theory (but consistent with schema theory), that positive and negative reinforcement conditions had comparable effects on behaviorally-inexperienced (though not experienced) viewers' attitudes and behavioral intent.

In sum, social cognitive theory is likely useful in helping to explain the unintended and negative effects of media consumption on audience behaviors. However, future research would benefit from more carefully constructed studies that pay greater attention to the operationalization of the theory's constructs.

Social Cognitive Theory-Based Examinations of Intended Media Effects

Given the powerful social influence of media models, scholars have not only drawn from social cognitive theory to explain unintentional effects of the media, but they have also found it useful in their efforts to design messages to maximize the potential positive impact of media content through entertainment-education programming and health campaigns to promote prosocial change. This research is briefly reviewed below.

Entertainment-education. Entertainment-education (E-E) is the purposeful blend of prosocial messages in entertainment programming (Singhal & Rogers, 1999). This strategy owes its effectiveness to the process of oblique persuasion by which educational or persuasive messages are "sugarcoated" in entertainment content, which lowers audiences' resistance and defenses to the embedded persuasive messages. Beginning with the earliest programs developed in Mexico in the 1980s (Sabido, 1981), E-E radio and television efforts have targeted a range of behaviors and topics, such as AIDS prevention, gender equity, condom use, sex education, and

literacy, and have been guided by social cognitive theory insights regarding the influence of social models. E-E programs typically include three types of characters from which audience members can learn: positive role models who support a prosocial value, negative role models who reject this value, and transitional models who change from negative to positive models over the course of the serial or program. Transitional characters provide particularly relevant models from which audiences can learn. Audiences may relate to the uncertainty and doubt transitional characters experience when first considering a new behavior, and can observe the characters being rewarded for their adoption of the behavior as the story progresses (Singhal & Rogers, 1999)

To encourage observational learning and behavioral modeling, E-E programming is packaged in popular media formats, such as *televnovelas* in Mexico and radio serials in South Africa, which enhances attentional processes (Singhal & Rogers, 1999). Additionally, characters are physically and psychologically attractive, and are often of a higher status than the target audience. The repetitive structure of serial programs. such as the *telenovelas*, encourages retention processes. These retained symbols are converted into behavior by modeling, and refined based on feedback. Finally, characters are typically rewarded for positive, prosocial behavior and punished for antisocial behavior as a means of promoting motivational processes (Nariman, 1993; Singhal & Rogers, 1999).

Many E-E efforts have proven successful (see Dittman, 2004; Rosins, 2006; Smith 2002). For example, Rogers et al. (1999) describe the effects of a radio serial drama on the self-efficacy of poor women in Tanzania to manage their reproductive life through family planning. Before the serials aired, many women believed reproductive processes were directed by fate, and thus not under their control. As the models in the serials demonstrated personal control over these

processes, listeners were empowered to seek the services of family planning clinics (see Vaughn, Rogers, Singhal, & Swalehe, 2000).

Although the success of these programs is encouraging, E-E studies are sometimes criticized for lacking rigorous evaluations that illuminate whether specific content led to specific effects as predicted by social cognitive theory. Most programs are evaluated with relatively general measures of audience exposure, coupled with audience surveys and content analyses of scripts and audience letters (Singhal & Rogers, 1999, 2002). Thus, questions regarding the process by which resulting behavior change may have occurred are left unanswered. Slater and Rouner (2002) call for greater use of laboratory experiments using E-E content to better understand the theoretical mechanisms through which E-E content alters beliefs, attitudes, and behavior (see Moyer-Guse & Nabi, 2008).

Health campaigns. Unlike E-E efforts, health campaigns tend to focus specifically on the concept of self-efficacy given the vast body of literature supporting the influential role it plays in health behavior change (see Bandura, 1997, and Maddux, 2002, for reviews). Scholars suggest that media can help audience members to develop self-efficacy by providing them with behavior models, instruction, encouragement, and the reduction of negative affect (Bandura, 1982; Flora & Maibach, 1989). There is some evidence that this is true. A number of experimental studies have tested the effectiveness of messages building self-efficacy through vicarious experience (e.g., videos presenting step-by-step instruction, encouragement, and actors demonstrating the target behavior, see Anderson, 2000; Anderson & McMillon, 1995) and verbal persuasion (e.g., videos describing the steps of a behavior and encouraging enactment by highlighting the ease, simplicity, or familiarity of the behavior; see Anderson, 1995). These messages, along with those featured in real-world campaigns, have produced encouraging results in terms of increases in

self-efficacy and behavioral intention (Agha, 2003; Anderson 1995, 2000; Anderson & McMillon, 1995; Maibach, Flora, & Nass, 1991; Meyerowitz & Chaiken, 1987; O'Reilly & Figgins, 1991; Ripptoe & Rogers, 1987).

In sum, research on the intentional incorporation of concepts associated with social cognitive theory into health-promoting media messages – both entertainment and campaign-based – have proven effective in generating healthy behaviors in audiences. As work progresses in this area, greater attention to assessing the process of effects will be important to establishing that the process as conceptualized by the theory is, in fact, what underlies the positive effects generated by exposure to such media content.

Future Directions for Social Cognitive Theory-Based Media Research

Although social cognitive theory is frequently cited as a useful theoretical framework in the literature on media effects, the previous overview suggests that its contribution to our understanding of media effects processes has not been tapped as deeply as it could be. Social cognitive theory is rich with suggestions for media message components that could be manipulated to test not only issues related to attention and motivational processes but self-efficacy as well. Therefore, in this section, we offer some thoughts regarding variables that might be particularly useful to future media effects research, drawning from a social cognitive theory perspective.

Issues of Attention, Identification, and Motivation

As noted above, observational learning from media begins with audience members' attention to the media content, which is affected by source and contextual features. Attractive, similar models are proposed to facilitate attention (Bandura, 2002), as might relevant, novel, or salient content. Each of these variables has received some attention in the literature, but as we

consider elements uniquely suited to media contexts, there are some message features that are likely to be influential. For instance, Nabi and Krcmar (2004) propose that enjoyment of media could potentially associate with enhanced attention to and retention of modeled behaviors. Further, any emotionally evocative stimulus – whether enjoyable or not -- is likely to capture audience attention and increase the likelihood of retention (see Nabi, this volume). Indeed, features of the media themselves, such as editing style and interactivity, are also likely to promote attention. Surely there are other media features that may serve this function, and those approaching media effects research from a social cognitive theory perspective should consider incorporating these variables into their research.

Another potentially rich area of exploration involves issues of identification and behavioral reinforcement in the modeling process. Identification refers to the extent to which an individual relates to a model and perceives the model to be similar to him or herself, with similarity being based on a number of characteristics, including demographics, physical characteristics, personality traits, or attitudes. According to Bandura (2001), greater perceived similarity is associated with greater identification, which has been shown to increase the likelihood of observational learning (e.g., Andsager, Bemker, Choi, & Torwel, 2006; Ito, Kalyanaraman, Brown, & Miller, 2008).

Evidence suggests that identification with a character in the media, coupled with perceptions of positive outcomes of their behaviors, can boost the likelihood that audience members may model the depicted behaviors (Nabi, 2009). However, although social cognitive theory suggests that the impact of identification is contingent upon the nature of behavioral reinforcement (that is, the behavior of liked characters will be modeled if they experience positive outcomes but will not be modeled if the characters experience negative outcomes),

recent evidence calls this prediction into question. Nabi and Clark (2008) found that intentions to model the risky behavior of a liked character with whom viewers identified increased, even when the behavior was negatively reinforced. The authors argue that this apparently surprising outcome is to be expected when one considers that viewers approach television programming with schemas that bad things don't happen to liked characters. Thus, the value of the negative reinforcement is undermined by viewers' positive future expectations. Further, they argue that a risky behavior may be associated with positive value, despite the depiction of punishment associated with the behavior, simply because of the positive feelings the audiences have for the similar, liked character who engaged in that behavior. After all, young viewers have found similar others to be fun, intelligent, and mature (Andsager, Bemker, Choi, & Torwel, 2006). Therefore, audience members may be prone to modeling the behavior of liked characters, regardless of the behavioral reinforcement depicted, given their admiration for those (often idealized) personalities. If this is the case, media characters might be well-suited for modeling positive behaviors, but may not serve as useful conduits for discouraging risky behavior.

Clearly, additional research on the role of identification with media characters and the conditions under which such identification motivates or discourages behavioral modeling would be most useful. Focusing specifically on issues of behavioral reinforcement, future research should examine the match between the intended valence of behavioral reinforcements depicted in mediated content and the audience members' perception of those reinforcements. Additionally, future work should investigate the degree of negative reinforcement that may be suitable for media models to experience. Nabi and Clark (2008) suggest that negative outcomes that are more severe could discourage enactment of the behavior; however, audience members may perceive harsh outcomes to be overly dramatic, and thus too unrealistic to happen in their own lives.

Examining not simply who audiences identify with but the nature of the identification-behavioral reinforcement interaction would be most useful in determining how to best structure intervention efforts regarding risky behaviors.

Reflections on Self-Efficacy

Scholars suggest that media content can help develop audience self-efficacy by providing behavior models, instruction, encouragement, and the reduction of negative affect associated with behaviors (Bandura, 1982; Flora & Maibach, 1989). However, fewer media-based campaigns are built on this proposition than might be expected. As Anderson and McMillon (1995) have noted, teaching specific behavior change techniques and encouraging confidence in those skills are "components rarely addressed in public information campaigns" (p. 341). This claim speaks to the largely untapped efficacy-boosting potential of mediated content.

The research that has examined the ways in which media messages might increase self-efficacy has focused primarily on two of the four efficacy sources—vicarious experience and verbal persuasion—while ignoring enactive mastery and physiological states. Future research, then, might explore how media can be used to encourage the development of efficacy beliefs through these processes. For example, applications of new media, such as video games that monitor and encourage individuals' exercise behavior, may be well-suited to promote self-efficacy gains through enactive mastery, the strongest source of self-efficacy beliefs. Further, media might be used to manage audiences' physiological states through music, visuals, camera angles, edits, and the like, to encourage hopeful feelings and minimize anxious ones.

Finally, we wish to note that though self-efficacy is only one of the determinants that regulate motivation, affect, and behavior according to social cognitive theory, it is often tested in isolation of other theoretical components. Therefore, those engaged in health promotion efforts

or indeed any test of social cognitive theory's predicted processes, should measure the full set of determinants posited by the theory rather than only the efficacy component. Only through more complete theoretical testing will we gain a fuller appreciation for the ways in which social cognitive theory helps to explain media effects processes and any related limitations that might exist.

Social Cognitive Theory and New Media

Given the explosion of new media in recent years, it is only reasonable to consider what such changes in the media landscape might mean for the media-social cognitive theory relationship. According to Chafee and Metzger (2001) new media, like the Internet, are those that "allow for a greater quantity of information transmission and retrieval, place more control over both content creation and selection in the hands of their users, and do so with less cost to the average consumer" (p. 369). The interactivity associated with virtual reality technologies and video games often leads to the inclusion of these forms of media under the new media umbrella as well (Biocca, 1992; Livingstone, 1999). Given the characteristics differentiating them from traditional media, new media may be better suited to meet some of the challenges of testing social cognitive theory, such as portraying a range of behavioral reinforcements, increasing identification between the model and the target audience, and building self-efficacy.

First, new media may be less limited than traditional media in their ability to portray behavioral reinforcements. Traditional media research often requires the editing of pre-existing content, such as scenes from television programs, to portray behavioral consequences, and thus the availability of content may prohibit testing stimuli that reflect a range of outcomes. Immersive virtual environment technology (IVET), which includes both the replacement of natural sensory information with digital information and the ability to tailor that digital

information in response to users' actions (Blascovich, 2001), can represent a broader range of reinforcements for a behavior. For example, Fox and Bailenson (2009) tested the capacity of IVET to encourage exercise and were able to very readily manipulate the positive outcomes (the virtual self lost weight in response to exercise) and negative outcomes (weight gain in response to lack of exercise) associated with the different behaviors. Of note, the conditions in which exercise was accompanied by reinforcements of weight loss (positive) or weight gain (negative) both encouraged more voluntarily exercise than did the other experimental conditions.

Health-related video games have also demonstrated the capacity to present incremental behavioral reinforcements. For example, a game designed for diabetic children awarded game players points for regulating the diet, insulin, and blood sugar levels of a diabetic elephant character. The health of the character increased when players performed maintenance behaviors, and decreased when they failed to do so. Game play led to increased self-efficacy, improved dietary and insulin practices, and reduced diabetes-related urgent care visits (Brown et al., 1997). Similar results have been found for a health video game for children with asthma (Lieberman, 1997).

Second, though similarity between the model and target is positively associated with behavioral modeling, the current degree of similarity that traditional media can offer is often limited to categorical similarities, such as sex, ethnicity, or age. Even when matched on these characteristics, targets may not highly identify with models (Eyal & Kunkel, 2008). Additionally, even when media portrayals offer maximum similarity, such as video recordings of the target, behavioral depiction is restricted to the target's skill level in that behavioral domain (Dowrick, 1999). However, as Fox and Bailenson (2009) suggest, IVET allows for the creation of virtual reality selves (VRSs) that can be matched to a target on any number of characteristics and able to

perform skills that exceed the target's ability. Therefore, these models engender the highest level of identification without sacrificing a high level of skill. Indeed, Fox and Bailenson found that participants who saw a VRS, rather than a virtual representation of another person (VRO), believed themselves to be more similar to the model and exercised significantly more than those who saw the VRO. Although technology offering the capability to create and use realistic VRSs is not yet widely available, many mass marketed video games are beginning to offer customizable avatars, such as the Nintendo Wii's "Mii," that may serve related functions. Research examining the effects of such avatars on identification will be most useful in understanding observational learning processes from media.

Along with virtual reality and video games, the Internet also provides the capability to deliver individualized, or "tailored," messages with customized information to an individual based on characteristics that are unique to that person and related to a behavior interest (Kreuter, Stretcher, & Glassman, 1999). Tailored materials may include depictions of models that are similar on a number of demographics or psychographics, which enhances similarity between a model and a target. Thus, there is little doubt that new media will be most helpful in creating messages that boost model identification that, in turn, allow for more precise tests of the tenets of social cognitive theory.

Finally, as noted above, enactive mastery and physiological feedback have been largely overlooked as methods of boosting self-efficacy in media contexts. New media, however, may be well-suited to testing these approaches to boosting self-efficacy. For example, the VRS in Fox and Bailenson's (2009) study responded to the actual physical activity of participants using IVET; though self-efficacy was not measured, social cognitive theory predicts that those participants who saw VRS models positive rewarded for exercise they engendered would

experience an increase in self-efficacy. Additionally, mass market games, such as Nintendo's Wii Fit, monitor audience members' performance on a number of physical activities, provide feedback to help game players adjust their performance, and offer encouragement. Thus, new media are well-suited to test these elements of social cognitive theory (see Downs & Oliver, 2009, for an initial effort in this regard).

Conclusion

Social cognitive theory is one of the most heavily referenced in media effects research (Bryant & Miron, 2004; Potter & Riddle, 2007), and for good reason. It offers a comprehensive understanding of how people learn behaviors in a range of contexts, including those based on media exposure. Yet, empirical research is surprisingly lax in its tests of the theory in media contexts. As this new decade of media research dawns and in light of the amazing innovations in media modalities in recent years, the timing is right for more careful tests of social cognitive theory's range of predictions in media contexts. To the extent the predictions are supported, those hoping to develop interventions based on its principles can be assured their strategy is appropriate. To the extent it is determined that modifications to predictions might be necessary to accommodate unique media contexts, this too is critical information to uncover. There is no doubt that social cognitive theory will continue to be a leading theory in understanding the effects of media on behavioral learning for years to come, and by more fully considering the nuances of the theory, media research will be far better positioned to benefit from its richness.

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