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Missed Programs (You Can't TiVo This One): Why Psychologists Should Study Media

Bradley M. Okdie[1], David R. Ewoldsen[2], Nicole L. Muscanell[3], Rosanna E. Guadagno[4], Cassie A. Eno[5], John A. Velez[6], Robert A. Dunn[7], Jamie O'Mally[8], and Lauren Reichart Smith[9]

[1]Department of Psychology, The Ohio State University at Newark; [2]Department of Communications, The Ohio State University; [3]Department of Psychology, Knowledge Media Research Center, Tübingen, Germany; [4]National Science Foundation, Arlington, VA; [5]Center for Academic Excellence, Bellevue University; [6]School of Communication, The Ohio State University; [7]Department of Communications, East Tennessee State University; [8]National Research and Training Center on Blindness and Low Vision, Mississippi State University; and [9]Department of Communication and Journalism, Auburn University

Abstract

Media psychology involves the scientific examination of the cognitive processes and behavior involved in the selection, use, interpretation, and effects of communication across a variety of media (e.g., via the Internet, television, telephone, film). Media are central to people's lives, with projections indicating that an average person spent over 3,515 hours using media in 2012. New technologies are increasing the importance of media. Data from two content analyses demonstrate the underrepresentation of media psychology in mainstream psychological literature and in undergraduate and graduate psychology course offerings. We argue for the importance of a psychological approach to the study of media because of its presence in people's lives and because psychologists use it in their research and their choices may affect the external validity of their findings. We provide a useful framework from which psychologists can approach the study of media, and we conclude with recommendations for further areas of scientific inquiry relevant to psychological science.

Keywords

media, mediated communication, media psychology, philosophy of science

Media—television, the telephone, newspapers, the Internet, films, video games—play a central role in human behavior. We read media, we watch media, we create media, and we interact with others using media. Media psychology—the psychological study of the causes and consequences of humans' media use—is an emerging area of psychological inquiry. However, a review of recent mainstream psychology journal issues suggests that interest in the development and advancement of the psychological study of media is negligible. We find that surprising because psychological research itself uses media, and the choices psychologists make may affect the external validity of their studies. Substantively, within the framework of media psychology are opportunities for new examinations of established psychological concepts such as relationship formation, learning, the self and identity, prosocial behavior, therapy techniques and interventions, and stereotyping and prejudice. For example, Skype is currently being used for long-distance psychotherapy for those who live in

rural areas (Nelson, 2010), and electronic learning management systems are being used for distance education. Thus, understanding how the attributes of these technologies affect the client–patient relationship and the learning process is important.

The purpose of this article is to encourage psychological scientists to incorporate media psychology into their research, to advocate the study of media and of media attributes, and to identify some areas of media that may be fruitful for further psychological inquiry. We review current media research and conclude by presenting a useful framework for the study of media by psychologists that focuses on the key attributes by which media vary.

Corresponding Author:
Bradley M. Okdie, The Ohio State University at Newark, Department of Psychology, Box 870348, Newark, Ohio 43055
E-mail: Okdie.2@osu.edu

Defining Media Psychology

What exactly is media psychology? We propose the following definition: Media psychology is the scientific study of the behavior and cognitive processes involved in the selection, uses, interpretation, and effects of mediated communication. The term *mediated* indicates any communication outside of face-to-face interaction that requires mediated transmission (i.e., passing through a media channel). The communicative act can be intended for a single person (e.g., a letter or e-mail between two people) or a mass audience (e.g., a post on Facebook). For example, a television program is the mediated channel by which its producers communicate a message to a mass audience. Books, e-mail, text messaging, letters, social media Web sites, and television are all examples of mediated communication.

Prevalence of Media

People of all cultures seek entertainment (Vorderer, Steen, & Chan, 2006), and media consumption (e.g., listening to the radio, watching television and films, browsing the Internet) is a large part of individuals' lives. The 21st-century media user has been labeled the "overwhelmed consumer" as a consequence of the abundance of available media choices (Bryant & Davies, 2006; Guadagno, Okdie, & Muscanell, 2013). For instance, portable media technologies, such as cell phones, mp3 players, and tablet devices, expand the choices for entertainment and allow individuals to consume media in nearly any location at any time (Thomasch, 2007).

People spend a large proportion of their total income on media, revealing the value placed on entertainment. After accounting for essentials (including food, housing, apparel, transportation, health care, and retirement funding), people in the United States spend just over 25% of their discretionary household income on some form of entertainment, and the majority of these different forms of entertainment rely on media. Given the monetary investment, people spend a large proportion of their time with media. The U.S. Census Bureau collects data on the use of traditional media, such as television and newspapers. It reports that the average person[1] consumed approximately 3,475 hours of media in 2004, with this number increasing by 40 hours per year in 2012 (U.S. Census, 2010). Although these statistics indicate an increase in the consumption of media, they are likely underestimates. For example, cell phone usage has grown in recent years and is not included in these statistics (Kavoori & Arceneaux, 2006). In 2010, the U.S. Census Bureau reported that 63,718,000 adults (18 years or older) accessed the Internet using mobile devices such as cell phones.

In addition to the increase in media use, the types of media available have also expanded and are becoming increasingly sophisticated. The advent of the Web 2.0 platform for Web development provides new media users with a rich source of information, interactive media (e.g., video games), and user-to-user interactions (e.g., social networking sites). Media scholars have the challenge of examining "traditional" forms of media (e.g., television, radio, newspaper), the myriad of ways these media are changing (e.g., AppleTV, custom radio stations on Pandora .com, online newspapers), and the continual stream of new media being produced (e.g., text messaging, blogging, social networking Web sites). Contemporary consumers are now downloading television programs onto portable media devices for later viewing, and "smart" phones allow people to check e-mail anytime and anywhere or use built-in navigational devices to discover their friends' location. New media such as Facebook and YouTube afford the average individual a greater stake in the content of media, facilitating a shift from being passive consumers to being active producers of media (Jenkins, Ford, & Green, 2013). Indeed, an average of 24 hours of content is uploaded to YouTube each minute (Jenkins et al., 2013).

These data indicate that media play a central role in most individuals' lives. However, before considering how psychologists should study media, we provide a discussion of media psychology's limited current representation in psychological research.

Psychology's Time Investment in Media Psychology

Media psychology's neglect in major psychological journals, courses, and programs is surprising given its prevalence in individuals' lives (similar neglect has been given to other prevalent activities, such as food, eating, and play; see Rozin, 2007, for a review). To examine the pervasiveness of the study of media in the field of psychology, we conducted two analyses: one a content analysis of major general psychological journals and a second analysis for graduate and undergraduate courses at the top 50 psychology programs in the United States.

Content Analysis of Media Psychology Journal Space

A previous content analysis (1998–2002) of four of the leading mainstream social and developmental psychology journals found that less than 1.5% of the published articles related to media (Roskos-Ewoldsen, 2004). We examined the number of published journal articles related to media psychology in five top-tier psychology journals from 2003

to 2012. The content analysis included two specialty journals included in the previous analysis: *Journal of Personality and Social Psychology* and *Developmental Psychology*.[2] Given that much of the psychological research on media involves social and developmental phenomena, we thought the top-tier journals in those fields would be the most likely places to find articles related to media. In addition, to broaden our view of the media psychology research being published, we examined three top-tier general journals: the *Annual Review of Psychology, Psychological Bulletin*, and *Psychological Science.*

Despite using a very inclusive definition of media psychology, we found that only 1.6% of articles focused on media from 2003 to 2012 (see Appendix A for details of content analysis), similar to the 1.5% reported in the 1998–2002 content analysis (Roskos-Ewoldsen, 2004). These results support our argument that the study of media is relatively neglected in major general psychology journals and that this has been the case for at least the past 15 years. Exceptions to this trend include a growing literature on the validity and efficacy of teletherapy (i.e., telephone-based therapy; Dorstyn, Mathias, & Denson, 2011) and a recent increase in research on Facebook (see R. E. Wilson, Gosling, & Graham, 2012, for an example).

Analysis of Media Psychology Courses

Our second analysis examined the prevalence of media psychology courses in graduate and undergraduate psychology curricula. The analysis counted media psychology courses offered at the top 53 psychology programs in the United States[3] (based on the rankings of the National Research Council; Goldberger, Maher, & Flattau, 1995). Of the 53 programs, only 16 (12 undergraduate, 4 graduate) offered a media psychology course (see Appendix B for specifics on course offerings related to media). Minimal course offerings may contribute to the lack of interest in psychological research on media. Of course, given its multidisciplinary nature, courses on media are likely taught in other parts of university curricula in related disciplines such as journalism, communication, or education. However, such courses would reflect the approaches of those other disciplines.

How Psychologists Currently Study Media

As the above data and research indicate, psychology, as a whole, has attended little to media psychology. However, research has emerged in specific domains that fit within the framework provided by our working definition of media psychology. The majority of psychological research on media is conducted on "popular" media topics such as educational television, television or video game violence and aggression, and computer-mediated communication (e.g., Huesmann, Moise-Titus, Podolski, & Eron, 2003; McKenna & Bargh, 2000). Although important information has emerged from this research, its applied focus does not examine the unique attributes of media and how those attributes influence human cognition and behavior. Research on media psychology has largely focused on social problems and, in particular, on media's contribution to the worsening of social problems, such as violence and antisocial behavior (Anderson et al., 2003; Giles, 2003; Roskos-Ewoldsen, 2004). Questions addressed in these studies treat media as a mechanism for presenting stimuli (e.g., using television to explore the effects of violence on behavior, using virtual environments to study nonverbal behavior), rather than the focus of inquiry in its own right (e.g., comparing media that vary in degree of realism to explore the effects of violence on behavior). Little emphasis is placed on the psychological processes occurring while using media or the impact of unique characteristics of media.

In the following sections, we briefly review some domains in which media has been studied by psychologists. These studies illustrate the benefits in using psychological frameworks to study media-related processes while at the same time highlighting areas that have been neglected or need further exploration.

Educational Television

Educational television research has led to recommendations on appropriate programming for children's viewing (Fisch, 2000; Greenberg & Rampoldi-Hnilo, 2001; Krcmar, Grela, & Lin, 2007; Schmidt, Crawley-Davis, & Anderson, 2007). The majority of this research focuses on developmental benefits (e.g., lexical development; Naigles & Hoff-Ginsberg, 1995; Rice, Huston, Truglio, & Wright, 1990; Singer & Singer, 1998) and possible cognitive delays (e.g., grammatical development; Naigles & Mayeux, 2001) resulting from children's television viewing. With the exception of research on the content of educational programming, such as empathy, much of the research on educational television has centered on examining outcome variables, with little focus on the specific attributes of educational television that would benefit or hinder children. For example, increases in interactivity and fidelity (realism) are likely to influence whether children learn from educational programs (Fisch, 2000).

Violent Television

As with educational television, initial investigations into the psychological and behavioral effects of violent television were motivated by a desire to ensure that violent

programs did not negatively impact viewers. These early studies and others support the argument that there is a relationship between viewing violent media and later aggressive thoughts and behaviors in children and adults (for reviews, see Anderson et al., 2003; Savage & Yancey, 2008). Psychologists have offered several explanations for this relationship, such as individuals' cognitive processes, arousal states that are a consequence of viewing violence, and, more recently, the generalized aggression model (Anderson & Bushman, 2002; Anderson, Deuser, & DeNeve, 1995; Bandura, 1985; Berkowitz, 1993; Jo & Berkowitz, 1994; Roskos-Ewoldsen, Roskos-Ewoldsen, & Carpentier, 2009). Furthermore, researchers have examined ways to reduce the negative effects of violent media, such as communication between parents and children, increasing media literacy, and consuming media that is in opposition of violence (Cantor & Wilson, 2003). Even with the substantial amount of research on the role of violent media in aggression, the focus remains less on the attributes of media and more on the psychological outcomes of media use.

Violent Video Games

Research on video games has also largely emphasized the negative effects of violent video games (for review, see Anderson & Bushman, 2001; Buellens, Roe, & Van den Bulck, 2008; Sherry, 2001) and positive effects of educational, health, and social change games (see Lee, Peng, & Park, 2009) on behavior. The primary focus has been outcome-based, and investigators have attended little to the specific attributes of video games or how people play the games (for exceptions, see Anderson & Bushman, 2002; Ewoldsen et al., 2012; Gitter, Ewell, Guadagno, Stillman, & Baumeister, 2013; Velez, Mahood, Ewoldsen, & Moyer-Guse, in press).

Computer-Mediated Communication

Another area of media psychology actively studied by psychologists is computer-mediated communication (CMC), defined as any communication between individuals that occurs via computer (e.g., e-mail, instant messaging). Early studies examined various attributes of CMC and how they affect social interactions (Fulk & DeSanctis, 1995; Hiltz & Turoff, 1978; Sproull & Kiesler, 1991). Other research has focused on the differences between CMC and face-to-face interactions (e.g., Di Blasio & Milani, 2008; Okdie, Guadagno, Bernieri, Geers, & Mclarney-Vesotski, 2011; Postmes, Spears, Sakhel, & de Groot, 2001), such as how CMC affects the time and pace of communication, nonverbal cues, physical appearance, and anonymity and how it reduces obstacles to communication that are associated with physical distance (Bargh

& McKenna, 2004). Still others have investigated how individual differences such as personality and gender interact with specific forms of CMC (Dunn & Guadagno, 2012; Guadagno, Okdie, & Eno, 2008; Hamburger & Ben-Artzi, 2000; Muscanell & Guadagno, 2012). Although CMC research has examined psychological questions and attempted to uncover underlying processes, the focus of contemporary research has been on using CMC as a means to study other phenomena rather than examining the psychological and behavioral effects of CMC (Guadagno, Okdie, & Muscanell, 2013).

Attributes of Media: A Conceptual Framework

The changing nature of media presents a problem for scholars deciding which media to study and whether data are generalizable across platforms. For example, does watching a violent TV program have the same effect if it is viewed on an iPhone or a large-screen high-definition television? We argue that a useful direction for future research would involve identifying the critical attributes on which media differ and using these attributes to differentiate and understand how media operate psychologically (Eveland, 2003). That is, if we know that a static Web page and an Internet chat room differ on their levels of interactivity, we can form hypotheses about how interpersonal interactions via those modes of communication will differ on the basis of that attribute (see Table 1 for an example). We can also speculate on how results from mediated laboratory research might differ from behavior in the nonmediated "real" world.

In the following sections, we identify five attributes by which media vary and discuss them in ascending order of complexity: fidelity, privacy, channel, interactivity, and content. In each section, we define the attribute, describe how it may be useful to psychologists across a broad range of domains, and discuss any related subtopics subsumed under the general attribute. The list is not exhaustive but extends previous frameworks that have identified attributes along which media differ (Eveland, 2003; Poe, 2011). Attributes were chosen for their psychological relevance and usefulness in distinguishing media. We believe that a dynamic list of attributes will be necessary as new media emerge and offer the attributes noted below as a starting point from which a more comprehensive list may be derived.

Fidelity

Fidelity refers to the degree that a medium is detailed, complete, and accurate in its reproduction of the information being transmitted. For example, Blu-ray discs have higher fidelity than DVDs because Blu-rays present

Table 1. Example Media by Attribute Interaction

Type of media	Attribute				
	Fidelity	Privacy	Channel	Interactivity	Possible consequences
Paper book	–	+	Visual	–	Increased control
E-mail	–	++	Visual	–	Self-awareness
Web page	–	+	Audio/visual	++	Self-presentation
Message boards	– –	++	Visual	+	Extreme positive and negative behavior
Online video games	++	+	Audio/visual/ mechanical	++	Deindividuation
Blu-ray movie	++	+	Audio/visual	–	Social presence
Skype	+	– –	Audio/visual	++	Increased learning
Social networking sites	– –	–	Audio/visual	++	Increased relationship formation

Note: Individual media are likely to vary within each class to the extent that they possess degrees of each attribute. The content variable is not included in this table as it is likely to vary significantly within each medium and is better conceptualized as content by attribute interactions. The type of media are organized chronologically from traditional to contemporary. A plus sign denotes high values for an attribute; a minus sign denotes low values for an attribute (two signs indicate even higher values).

the images and sound with fewer distortions and with more detail. Poe (2011) argued that fidelity is an important dimension on which media can vary, particularly when dealing with different types of sensory information. For example, because they rely mostly on verbal descriptions to transmit ideas, books and newspapers generally have lower fidelity than movies or television, which can use both auditory and visual information. However, the message content interacts with the channel through which the message is delivered to determine the fidelity of a message. Books and newspapers have potentially equal or even higher levels of fidelity than movies and television when presenting abstract ideas. But with rare exceptions, books and newspapers will have less fidelity than movies and television when representing a visual scene. A picture of a mountain meadow has higher fidelity than a description of the same mountain meadow because it presents a more detailed, complete, and accurate depiction of the location of plants in the meadow, the location of the plants in relation to each other, the weather, the color of the plants, and so on. Likewise, a video of the meadow would generally have even higher fidelity if it included sound or the motion of the plants from the wind. Of course, it is important to remember that fidelity can vary both between and within a medium as the Blu-ray versus DVD example above highlights.

Fidelity should affect the psychological experience of individuals engaged with the media by influencing feelings of social presence within a media environment (Bailenson, Yee, Merget, & Schroeder, 2006; Bracken, 2005) and transportation into a media world (Busselle & Bilandzic, 2008). Social presence is the sensation of being drawn into the narrative (Witmer & Singer, 1998). Transportation refers to the experience of being a part of the media story (Green & Brock, 2000). Although the

impact of fidelity across media has not been subject to much empirical research, the influence of fidelity has been examined in the area of virtual reality or immersive environments, which are designed to be fully accurate representations of alternative environments (Bracken & Skalski, 2010). Generally, greater fidelity in the immersive environment increases the feeling of presence that the viewer experiences (Bracken, 2005; Witmer, Jerome, & Singer, 2005). This increase in presence typically translates into higher levels of entertainment and more pronounced physiological responses to media depictions (Hartmann, Klimmt, & Vorderer, 2010).

Fidelity may also influence the persuasiveness of a medium (Daugherty, Gangadharbatla, & Bright, 2010; Guadagno & Cialdini, 2005; Sundar, Oh, Kang, & Sreenivasan, 2013). For example, the perceived realism of a virtual human in a virtual environment magnifies source effects of persuasive messages originating from that avatar (e.g., a persuasive source will be more persuasive, but a nonpersuasive source will be less persuasive; Guadagno, Blascovich, Bailenson, & McCall, 2007). Moreover, when the fidelity of the virtual representation ("avatar") of a research participant was increased in an immersive virtual environment (i.e., the avatar looked more like the person), the exercise behaviors of the avatar had more influence on the participant's subsequent exercise behavior over a 24-hr period (Fox & Bailenson, 2009).

Fidelity may influence persuasion through several mechanisms. Increased message fidelity increases involvement with the message, and numerous studies have demonstrated that if the message contains compelling arguments, involvement with the message increases persuasion (O'Keefe, 2013; Petty & Cacioppo, 1979). In addition, fidelity may operate by increasing the vividness of a persuasive message (Sundar et al., 2013). Although the

relationship between message vividness and persuasion is complex (Guadagno, Rhoads, & Sagarin, 2011), generally vivid messages are more persuasive (Guadagno, Okdie, Sagarin, DeCoster, & Rhoads, 2013; Sundar et al., 2013). Finally, high-fidelity messages may be more persuasive as they provide a greater sense of actual engagement with the behaviors portrayed in the message, increasing attitude accessibility (Arpan, Rhodes, & Roskos-Ewoldsen, 2007).

Privacy

Privacy is the ability of individuals to hide personal information regarding identity and characteristics from others. The majority of media (e.g., gaming, e-mail or chat, and social media sites) offer users some control over the communication of information about themselves. For instance, individuals have greater control over textual and physical aspects of communication in CMC than in other forms of media and can choose to disclose or hide a variety of information (McKenna & Bargh, 2000). An individual may (or may not) choose to share a photograph or physical description with others. Thus, to the extent that a specific type of media affords users the ability to control information, it can be thought of as being high in the attribute of privacy.

We argue that the opportunity for privacy is largely a function of the type of media individuals choose to use. The data transmitted via some media are meant to be public (i.e., all individuals using the media are aware of and, in some cases, can interact with the data), whereas others are meant to be largely private (i.e., the data transmission can be viewed only by the intended recipient of the communication). For example, social media sites like Facebook are largely used to publicly connect and share data with (a limited set of) others (Dwyer, Hiltz, & Passerini, 2007). Individuals are encouraged to disclose a wide variety of information (e.g., employment, relationship status, photographs). Thus, maintaining high levels of privacy when using social media is nonnormative compared with sending an e-mail to a single recipient.

Other media also offer opportunities for privacy and may be used relatively anonymously. For instance, many message boards and information sharing sites (e.g., Yahoo Answers) require only a self-selected user name to post information (which can reveal little to no personally identifying information). We argue that these differences in privacy across media have important psychological implications for individuals who consume media. Specifically, two examples of psychological factors that may be affected by varying the privacy of media are deindividuation and self-presentation.

Deindividuation. Deindividuation is a psychological state characterized by low self-awareness leading to increased focus on group rather than personal norms and standards of behavior (Festinger, Pepitone, & Newcomb,

1952; Zimbardo, 1969). In face-to-face contexts, much research has examined anonymity, deindividuation, and antisocial behavior, concluding that states of anonymity and deindividuation lead to an exacerbation of group behavior—antisocial or otherwise. Media that offer high levels of privacy are likely to foster states of deindividuation, leading to more extreme behavior, whereas those that offer little privacy are less likely to foster deindividuation, leading to less extreme behavior. Indeed, research suggests that CMC (i.e., where potential for privacy is generally high) entails more hostile, aggressive, and group-conforming responses, and these effects have largely been attributed to states of deindividuation (Culnan & Markus, 1987; Dubrovsky, Kiesler, & Sethna, 1991). It is unclear to what extent deindividuation affects behavior for other forms of media, such as more public Web sites like Facebook. Thus, one area for potential research may include examinations of media that differ in opportunities for privacy and to what extent these media lead to states of deindividuation and related behaviors.

Self-Presentation. The attribute of privacy is also relevant to self-presentation (i.e., the way we create images of ourselves to impress others), which has received great attention from psychologists (Baumeister, 1982; Leary & Kowalski 1990; Schlenker, 1980; Vazire & Gosling, 2004). To the extent that media vary in privacy, users may have greater opportunities to selectively and deceptively self-present. For example, individuals consuming media high in privacy (e.g., message boards) may be more likely to engage in self-presentation tactics to increase liking or status and power, whereas those consuming media low in privacy may self-present to a lesser degree (Back et al., 2010). One potential avenue of psychological research, then, is to determine to what extent privacy capabilities of various media affect the self-presentational tactics that individuals use and what goals related to the self (e.g., self-esteem, self-fulfillment, self-affirmation) this fulfills.

Channel

Channel refers to the different senses that are used to receive or convey a message via the media (e.g., audio, visual). Some media isolate channel properties (e.g., text-based e-mail communication typically uses only the visual channel), whereas other media use multiple channels (e.g., online gaming includes auditory, visual, and motor channels). In addition, channel relates to some aspects discussed in the section on fidelity. That is, some channels offer more sophisticated and accurate representations of the content being portrayed or communicated (e.g., a Skype interaction includes auditory and visual components and is higher in fidelity when compared with an e-mail interaction, which includes only visual text information). Differences in channel between media

may largely affect psychological processes of social influence (how individuals perceive and are influenced by messages and others), motivation, and self-awareness. Channel effects should be highly relevant to psychologists across any domain in psychology in which information is presented using different types of media—and, in particular, when laboratory research cannot exactly emulate the real-world presentation of information.

Persuasion. Research on channel effects in persuasion has demonstrated that differences in the channel of communication can produce differences in message processing, which in turn affect the manner in which people are persuaded by messages (for review, see Chaiken, 1980; Petty & Cacioppo, 1984). For example, easily comprehensible messages are more persuasive in communication modalities where source cues (i.e., details about the sender of the message, such as expertise or likability) are most salient. Conversely, difficult-to-comprehend messages are more persuasive in written communication, where source cues are minimized (Chaiken & Eagly, 1983). Other research suggests that people are influenced more by characteristics of the communicator, such as gender in face-to-face interaction and by message content (Study 1 only) over e-mail (Guadagno & Cialdini, 2002). These results indicate that the personal cues of the communicator are salient in face-to-face interactions and that people are more likely to use those cues in evaluating a persuasive appeal. Other work indicates that when the communicator is more salient, characteristics of the source such as expertise or attractiveness have a greater effect on persuasion in face-to-face, audio, and audiovisual channels of communication relative to written communications (Chaiken & Eagly, 1983; Guadagno & Cialdini, 2007; Sparks, Areni, & Cox, 1998; Ziegler, Arnold, & Diehl, 2007).

Self-Awareness. The channel that information is delivered through may also influence the extent to which message recipients are in a heightened state of self-awareness. Self-awareness is a psychological state of increased focus on the self. Research indicates that social cues such as gender have a direct influence on message reception when individuals communicate face to face but not when communicating via CMC (Matheson & Zanna, 1989). Social cues may have an indirect impact by influencing participants' evaluation of the communication, which in turn leads to attitude change. Moreover, greater private self-awareness has been reported in CMC compared with face-to-face interactions. Thus, if a message is received through computer mediation, critical analysis is more likely to occur.

Cross-Channel Additivity. Channels may be combined to produce enhanced effects. For example, mental health interventions can use different channels to augment primary interventions. The cross-channel additivity hypothesis purports that by taking advantage of the unique properties of each media channel, the primary intervention will be strengthened. For example, researchers argue for the use of Web-based materials to augment and increase the efficiency of evidence-based preventive mental health interventions conducted in schools (e.g., the Coping Power program: see Lochman et al., 2001; Lochman et al., 2012; Lochman, Wells, & Murray, 2008). Within this modified intervention, a series of animated stories highlight the intervention's main points so that face-to-face time in the schools can be spent applying the highlighted concepts to improve the target behaviors. The use of multiple channels to deliver the intervention takes advantage of the Internet and narrative stories to increase students' and parents' participation in the program and their retention of the material (Kennedy, 2004) while maintaining the importance of face-to-face time with counselors. The effectiveness of this new multichannel intervention has yet to be established, but the channel additivity hypothesis builds on research demonstrating the strengths of different media channels (Lochman et al., 2012). Thus, future research should examine how the combination of channels in media may lead to similar or disparate outcomes in information processing and effective interventions.

Interactivity

Interactivity is the extent to which media afford individuals the ability to control or elicit responses from content provided through media, others using media, and the individual medium itself. For example, an individual may create a custom news feed on the Internet (i.e., controlling and eliciting content from media), use an instant messaging platform to communicate to others (i.e., eliciting content from others using the medium), post on Facebook (i.e., creating content for the medium), and/or play a video game in isolation (i.e., eliciting content from the medium itself). Each of these examples varies in the degree that individuals can create, select, and modify the content that is being communicated. Liu and Shrum (2002) argued for a multidimensional framework to clarify interactivity and its effects. Consistent with that conceptualization, we believe interactivity is composed of several components, such as directionality and control. That is, media may vary in interactivity to the extent that they allow for the dynamic exchange of data and afford users control over content.

Directionality. In psychology, media influence has traditionally been conceptualized as unidirectional. That is, influence is thought to move from media to the individual (e.g., media violence increases individual violence; Christensen & Wood, 2006) or from the individual to media (e.g., a person's mood influences choice

of television programming; Oliver, 2003) in a serial non-dynamic manner. However, this focus on the "effect" in one direction or another is an inadequate way to examine media's role in human behavior (Lang & Ewoldsen, 2011). A sequential framework cannot account for recent research depicting a reciprocal dynamic interplay between individuals and media (Gentile et al., 2009; Slater, 2007; Slater, Henry, Swaim, & Anderson, 2003).

The unidirectional model of media effects relied on the (erroneous) long-standing assumption of the perfect audience, in which everyone interprets a media story in exactly the same way (Hall, 2001). The assumption was that everyone who watched a violent TV show would interpret the show as violent. However, people interpret messages in different ways. In a classic demonstration of the interactive relation between the individual and media content, Vidmar and Rokeach (1974) found that interpretations of the 1970s TV program *All in the Family* differed depending on viewers' racial attitudes. People with negative attitudes toward African Americans interpreted the show as a realistic depiction of racial tensions in the United States, whereas those with more positive attitudes toward African Americans interpreted the show as a satirical attack on racism.

More recently, Eno and Ewoldsen (2010) found that interpretations of films dealing with racial issues were influenced by explicit and implicit attitudes. Unfortunately, little research has been conducted on differences in people's interpretation of media texts (Roskos-Ewoldsen & Roskos-Ewoldsen, 2010). However, research has demonstrated that interpretations are influenced by political ideology (Livingstone, 1990; Morley, 1999) and identification with characters within a narrative (Cohen, 2002; Vidmar & Rokeach, 1974). This research suggests that interpretation is guided by the narrative of the story and the individual, demonstrating that more dynamic approaches to media are necessary. Future research should consider the direction of influence when examining the extent to which media of any kind create psychological states.

Control. The preponderance of new media available to individuals has led to a departure from the traditional view of individuals as passive consumers of media (Katz, Blumler, & Gurevitch, 1974). With traditional media, individuals have had many choices but little control over the messages (i.e., TV viewers can change the channel but cannot dictate the content of television programs; Klapper, 1960; Westin, Mundorf, & Dholakia, 1993). Individuals using new media not only have many choices but also have control over the content of the messages (i.e., Internet consumers can customize Web pages to suit their preferences, click through a Web site for more in-depth information, or view movies and television on demand; Steuer, 1992).

Other examples of this new media trend include social networking Web sites (e.g., Facebook, MySpace, LinkedIn), which provide a mediated form of self-presentation (Kramer & Winter, 2008), and Web sites that rely solely on user-created content (e.g., YouTube, Wikipedia), again demonstrating that individuals are motivated not only to consume media but also to generate content. Games such as MMORPGs (massively multiplayer online role-playing games and other online environments; e.g., World of Warcraft; SecondLife) provide individuals control over their online experiences, from their choice of avatar (or virtual representation) (e.g., Dunn & Guadagno, 2012) to the game play they select. They can focus on tasks such as quests, or they can just communicate socially with other players. Therefore, the same virtual environment can have multiple meanings depending on the experiences individuals seek and their motivations for play (Yee, 2006).

To the extent that highly interactive media provide a perception of increased control, individuals may also garner other positive effects, such as increases in mood and health (Langer & Rodin, 1976). Media allowing for greater interactivity are likely to elicit greater learning, attitude change, and positivity. We believe it is useful to conceptualize the disparate effects of media by thinking of them not only in terms of degree of interactivity but also in the type of interactivity provided. Certainly, both playing a video game and writing fan fiction about a favorite TV series involve interactivity, but the types of psychological processes and consequences of each type of interactivity likely differ. An important caveat is that even the most interactive media require motivation to engage interactively. Thus, potential effects of control are likely to occur only if individuals are motivated to take advantage of that interactivity. In sum, the relationship between individuals and media should be conceptualized as a complex, synergistic interaction between the individual's prior thoughts and motivations, media depictions, how people engage these depictions, and the interplay between these factors and future exposure to media.

Content-by-Attribute Interactions

Content is any data transmitted via media. Thus, content may consist of information conveyed in a book as well as information presented in a persuasive communication or status update on a social network. We argue that it is inefficient to examine the effects of content in isolation without regard to the attributes of the media that deliver that content. Using our framework, individuals should examine specific content-by-attribute interactions, not just content alone, because it is likely that the same content consumed via different media will differentially affect individuals' psychological states and behaviors (Chaiken & Eagly, 1983; Worchel, Arnold, & Baker, 1975).

The psychological study of media has focused predominantly on content effects (Eveland, 2003). Research on media violence—one of the most heavily studied content areas in media psychology—consistently finds that media depictions of violence can increase aggressive thoughts, affect, and behavior (Anderson et al., 2003). Yet several attributes of media interact with content to mediate the influence of media violence on behavior. For example, interactivity can dramatically reshape the influence of violent video games, as demonstrated by the findings that playing a violent video game cooperatively with another player decreases the influence of the violent content on aggressive tendencies (Velez et al., in press) and can increase subsequent cooperative behaviors (Ewoldsen et al., 2012).

Content may also vary in its organizational structure. That is, individuals may be more likely to consume some content linearly, whereas other content may be designed for nonlinear consumption. For example, a novel is organized and typically consumed linearly (i.e., readers start from the beginning and finish at the end), whereas the Internet is organized and typically consumed in a nonlinear manner (i.e., individuals use hyperlinks to jump from Web site to Web site). The organizational structure of content affects many psychological processes, such as persuasion and memory. Indeed, research suggests that narrative content is more persuasive (Green, 2004; Marsh & Fazio, 2006), easier to comprehend (Saenz & Fuchs, 2002; Williams, 1993), and more memorable (Thorndyke, 1977) than didactic information.

The effects of content organization can also be seen in media such as video games. For example, the organization of a violent video game moderates the degree of aggressive thoughts and negative affect that the players experience. Violent video games organized using a narrative structure have greater effects on subsequent aggression than do nonlinear free-flow games (Schneider, Lang, Shin, & Bradley, 2004). This finding suggests that although violent media content has been found to influence subsequent aggression, a more nuanced approach acknowledges and explores the moderating influence of various attributes of media on media violence and aggressive behavior. For example, we might predict that the greater a violent video game's fidelity, privacy, violent content, and interactivity, the greater the likelihood that the game will lead to more aggressive cognitions and behaviors. Future research should continue to examine content effects while additionally investigating how the influence of content may be moderated by other attributes of media.

Usefulness of an Attribute Approach

In the following sections, we demonstrate the usefulness of an attribute approach to the study of media by briefly applying the framework to both a novel (massive open online courses [MOOCs]) and an established (psychology and law) domain in psychological research. In each section, we discuss how some of the attributes might be used to make predictions related to various psychological phenomena and discuss relevant research when available. In the section on MOOCs, we discuss how an attribute framework enables predictions of an emergent use of new media, and in the subsequent section on psychology and law, we discuss how existing research might be reexamined under the lens of an attribute framework.

MOOCs. The development of recent media technology has eased the delivery of information to a mass audience. The Internet is a fundamentally different type of learning environment where academic course materials can be delivered to large numbers of students simultaneously. These courses have been aptly named *massive open online courses* and are increasing in popularity, with some courses having over 100,000 students from dozens of countries (see Daniel, 2012, for a review). MOOCs are offered for free by many universities, and most students do not receive a degree or credit for their participation. Unfortunately, little research exists on the learning outcomes of those participating in MOOCs, although attrition rates have been reported to be as high as 80% (Rodriguez, 2012). Applying an attribute framework to teaching in MOOCs, we can predict how certain attributes such as interactivity and fidelity affect the learning process.

In general, interactivity can occur in a face-to-face classroom in many ways (e.g., student to teacher, student to student, student to material). Although students may have opportunities to engage in interactivity within MOOCs, that interactivity is likely different from that of a face-to-face interaction in a classroom. For example, course interaction may be limited to asynchronous communication (e.g., e-mail, class discussion boards), which should result in less engagement and less comprehension of course material. However, increasing interactivity using mechanisms such as live video-feed question-and-answer sessions as well as more synchronous forms of text communication (e.g., instant messaging) should attenuate these effects. For example, Web-based classrooms often include virtual office hours (text and/or video based) to increase interactivity. Using an attribute framework, we would predict that taking advantage of media that promote increases in interactivity (in all forms) will be critical in the learning process.

Fidelity is also likely to affect the learning process. Internet bandwidth limitations can constrain levels of fidelity when viewing recorded lectures online. As discussed earlier, this reduction in fidelity will likely decrease student engagement and learning compared with a high-fidelity learning environment. Thus, increasing fidelity

(either by increasing the quality of the original recording or by increasing one's Internet speed) should result in greater learning and engagement with the course material as well as decreased attrition rates.

Thus, the application of the attribute framework to the teaching of MOOCs allows us to identify potential challenges (as described above), to suggest steps that can be taken to address those shortcomings, and potentially to improve the educational outcomes associated with this new type of instruction.

Psychology and Law. Media effects are particularly important in psychology and law as their consequences may be life changing. Information in and beyond the courtroom is presented in various channels, and those channels vary in the extent to which they provide accurate depictions of information. Thus, we focus on channel and fidelity effects in this section.

The fidelity of information presented to judges and jurors may affect trial outcomes. For example, the virtual re-creation of crime scenes has been shown to facilitate the accuracy of eyewitness identification (Guadagno, Blascovich, Beall, & Dimov, 2013). To the extent that information presented to judges and jurors is high in fidelity, we would expect such information to be more persuasive. But perhaps more important, fidelity should moderate jurors' ability to detect deception. Specifically, research suggests that many cues to deception, such as a higher pitched voice and pupil dilation, are overt (DePaulo et al., 2003; Zuckerman, DePaulo, & Rosenthal, 1981) and that these cues are more likely to be perceived when viewed on high-fidelity media. That is, judges and jurors consuming media higher in fidelity (e.g., a high-definition crime scene surveillance video or a taped suspect confession) should be more accurate in detecting deception. Critically, these cues are more predictive of deception when individuals engaging in the deception are highly motivated to pull off their lies, the deception is related to the transgression, and there are incentives for successful completion of the deception (DePaulo et al., 2003)—conditions likely to be present in legal settings.

When "mock jurors" are participants in psychology and law research, they may receive information about a trial in different channels such as text (e.g., a trial transcript), video, or a live enactment of a critical event or trial. Differences in how the relevant information is presented across these channels may affect outcomes such as punishment severity or the likelihood of guilty verdicts (for discussion, see Bornstein, 1999; J. R. Wilson & Bornstein, 1998). Some studies have reported that video information presented to mock jurors results in higher

guilt ratings (Ogloff & Vidmar, 1994), whereas others have reported negligible channel effects (Bornstein, 1999). Thus, these researchers would benefit from knowing how the presentation of information through various media channels affects the generalizability of the research results to real jurors.

Massive open online courses and psychology and law are just two examples that demonstrate the usefulness of applying an attribute framework to media to understand and predict psychological processes. These two areas highlight the potential for such a framework to not only let researchers examine emergent platforms and environments such as MOOCs but also to revisit classic psychological phenomena and gain new insights.

Conclusion

Many of the circumstances preventing media psychology from growing as an area of study may be due to the popular beliefs that media are an unscientific, applied area of study and that media do not affect psychological processes. The unfortunate consequence of these perspectives is that the minimal existing research on media relies on unidirectional and static theories involving more popular applied media topics (e.g., TV and video game violence); such research reaches a smaller audience when published in specialty journals such as the new American Psychological Association journal *Psychology of Popular Media Culture.* However, we argue that as a discipline, psychology stands to benefit from conducting research on the selection, use, interpretation, and effects of media. By considering more dynamic models and by differentiating media along the proposed attribute dimensions, psychology is presented with new research opportunities that can aid in the development of more comprehensive understandings of human behavior and of the validity of research practices themselves. To be clear, the call to apply an attribute framework to the study of media is not an attempt to replace existing approaches to the study of media. In fact, much has been learned from existing approaches, such as the study of media content. Instead, our hope is that applying the framework to the study of media will create avenues for exploring how different media may create psychological states that lead to predictable patterns of behavior. The possibilities are vast—whether we learn more about existing psychological concepts and theories by studying media or we introduce completely new theoretical concepts, such findings would undoubtedly provide critical insight to understanding human thinking and behavior.

Appendix A

Details of Journal Content Analysis

We analyzed five journals to determine the number of articles dealing with some aspect of the media. Two independent coders examined the table of contents of each volume and issue of all five journals from 2003 to 2012. Coders rated whether the title of each article focused on media. For a title to qualify as being media-related, it had to clearly be linked to media. Any title containing the following words or phrases qualified as being media-related (not inclusively): "media," "Internet," "computer," "web," "cyber," "online," "virtual," "technology," "movies," "film," "TV," "video game," "narrative," and "books." Interrater reliability was high, with percent agreement ranging from 96.3% to 99.9% across the five journals. Disagreements were resolved through discussions between the two coders.

Table A1. Number of Articles Related to Media Psychology Published in Top Journals From 2003 to 2012

Journal	Number of media psychology articles published	Total number of articles published	% on media out of total published
Journal of Personality and Social Psychology	9	1,469	0.61%
Developmental Psychology	35	1,214	2.88%
Annual Review of Psychology	4	243	1.67%
Psychology Bulletin	6	495	1.21%
Psychological Science	30	1,960	1.53%
Total	84	5,381	1.56%

Appendix B

Coders examined the graduate and undergraduate course offerings at each of the 53 universities and noted any courses offered in media psychology or closely related topics. Percent agreement was high (93.1%). Disagreements were settled in a discussion among authors. Of the 53 programs, four graduate programs and one undergraduate program were not coded because the coders could not obtain access to the course catalogs. In addition, two of the programs had only graduate programs and were included in the analysis.

Table B1. Schools Offering Graduate or Undergraduate Courses Relating to Media

Rank	University	Number of media psychology classes
1	Stanford University	1
3	University of Michigan	1
3	University of Illinois at Urbana-Champaign	1
14	Cornell University	1
16	Columbia University	1
21	University of Virginia	1
21	Northwestern University	1
29	University of Southern California	1
39	University of Florida	1
44	University of Arizona	2
51	University of Maryland at College Park	3
51	University of California, Santa Barbara	2
Total		16

Note: The analysis examined the number of media psychology courses offered at the top 50 psychology programs in the United States, based on the most recent rankings of the National Research Council (Goldberger, Maher, & Flattau, 1995). The number in the "Rank" column represents each school's rank according to the National Research Council.

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The authors declared that they had no conflicts of interest with respect to their authorship or the publication of this article.

Notes

1. Adults 18 or older were used for estimates of newspapers, consumer books, and consumer magazines. Persons 12 and older were used for estimates of the box office, broadcast television, cable television, the Internet, mobile, radio, recorded music, and video games. The three remaining types of media studied were the Yellow Pages, home video, and educational books.

2. Because the focus of this article is on basic theoretical research on media psychology, two journals from the previous content analysis were excluded from this analysis (the *Journal of Applied Social Psychology* and the *Journal of Applied Developmental Psychology*).

3. Fifty-three schools were included in the analyses, because four schools were tied for 50th place.

References

Anderson, C. A., Berkowitz, L., Donnerstein, E., Huesman, L. R., Johnson, J. D., Linz, D., . . . Wartella, E. (2003). The influence of media violence on youth. *Psychological Science in the Public Interest*, *4*, 81–110. doi:10.1111/j.1529-1006.2003 .pspi_1433.x

Anderson, C. A., & Bushman, B. J. (2001). Effects of violent video games on aggressive behavior, aggressive cognition, aggressive affect, physiological arousal, and prosocial behavior: A meta-analytic review of the scientific literature. *Psychological Science*, *12*, 353–359. doi:10.1111/1467-9280.00366

Anderson, C. A., & Bushman, B. J. (2002). Human aggression. *Annual Review of Psychology*, *53*, 27–51. doi:10.1146/ annurev.psych.53.100901.135231

Anderson, C. A., Deuser, W. E., & DeNeve, K. (1995). Hot temperatures, hostile affect, hostile cognition, and arousal: Tests of a general model of affective aggression. *Personality and Social Psychology Bulletin*, *21*, 434–448. doi:10.1177/0146167295215002

Arpan, L., Rhodes, N., & Roskos-Ewoldsen, D. R. (2007). Accessibility, persuasion, and behavior. In D. R. Roskos-Ewoldsen & J. Monahan (Eds.), *Communication and social cognition: Theories and methods*. Mahwah, NJ: Erlbaum.

Back, M. D., Stopfer, J. M., Vazire, S., Gaddis, S., Schmuckle, S. C., Egloff, B., & Gosling, S. D. (2010). Facebook profiles reflect actual personality, not self-idealization. *Psychological Science*, *21*, 372–374.

Bailenson, J. N., Yee, N., Merget, D., & Schroeder, R. (2006). The effect of behavioral realism and form realism of real-time avatar faces on verbal disclosure, nonverbal disclosure, emotion recognition, and copresence in dyadic interaction. *Presence: Teleoperators and Virtual Environments*, *15*, 359–372.

Bandura, A. (1985). *Social foundations of thought and action: A social cognitive theory*. New York, NY: Pearson.

Bargh, J. A., & McKenna, K. Y. A. (2004). The internet and social life. *Annual Review of Psychology*, *55*, 573–590. doi:10.1146/annurev.psych.55.090902.141922

Baumeister, R. F. (1982). A self-presentational view of social phenomena. *Psychological Bulletin*, *91*, 3–26.

Berkowitz, L. (1993). *Aggression: Its causes, consequences, and control*. New York, NY: McGraw-Hill.

Bornstein, B. H. (1999). The ecological validity of jury simulations: Is the jury still out? *Law and Human Behavior*, *1*, 75–91.

Bracken, C. (2005). Presence and image quality: The case of high-definition television. *Media Psychology*, 7, 191–205. doi:10.1207/S1532785XMEP0702_4

Bracken, C., & Skalski, P. (Eds.). (2010). *Immersed in media: Telepresence and everyday life*. New York, NY: Routledge.

Bryant, J., & Davies, J. (2006). Selective exposure processes. In J. Bryant & P. Vorderer (Eds.), *Psychology of entertainment* (pp. 19–33). Mahwah, NJ: Erlbaum.

Buellens, K., Roe, K., & Van den Bulck, J. (2008). Video games and adolescents' intentions to take risks in traffic. *Journal of Adolescent Health*, *43*, 87–90. doi:10.1016/j.jadohealth.2007.12.002

Busselle, R., & Bilandzic, H. (2008). Fictionality and perceived realism in experiencing stories: A model of narrative comprehension and engagement. *Communication Theory*, *18*, 255–280. doi:10.1111/j.1468-2885.2008.00322.x

Cantor, J., & Wilson, B. J. (2003). Media and violence: Intervention strategies for reducing aggression. *Media Psychology*, *5*, 363–403.

Chaiken, S. (1980). Heuristic versus systematic information processing and the use of source versus message cues in persuasion. *Journal of Personality and Social Psychology*, *39*, 752–766.

Chaiken, S., & Eagly, A. H. (1983). Communication modality as a determinant of persuasion: The role of communicator salience. *Journal of Personality and Social Psychology*, *45*, 241–256. doi:10.1037/0022-3514.45.2.241

Christensen, P. N., & Wood, W. (2006). Effects of media violence on viewer's aggression in unconstrained social interaction: An updated meta-analysis. In R. Preiss, M. Allen, B. M. Gayle, & N. Burrell (Eds.), *Media effects research: Advances through meta-analysis* (pp. 145–168). Hillsdale, NJ: Erlbaum.

Cohen, J. (2002). Deconstructing Ally: Explaining viewers' interpretations of popular television. *Media Psychology*, *4*, 253–277.

Culnan, M. J., & Markus, M. L. (1987). Information technologies. In F. Jablin, L. L. Putnam, K. Roberts, & L. Porter (Eds.), *Handbook of organizational communication* (pp. 420–443). Newbury Park, CA: Sage.

Daniel, J. (2012). Making sense of MOOCs: Musings in a maze of myth, paradox, and possibility. *Journal of Interactive Media in Education*. Retrieved from http://www-jime.open.ac.uk/jime/article/viewArticle/2012-18/html

Daugherty, T., Gangadharbatla, H., & Bright, L. (2010). Telepresence and persuasion. In C. C. Bracken & P. D. Skalski (Eds.), *Presence and popular media: Understanding media users' everyday experiences* (pp. 113–136). Mahwah, NJ: Erlbaum.

DePaulo, B. M., Lindsay, J. J., Malone, B. E., Muhlenbruck, L., Charlton, K., & Cooper, H. (2003). Cues to deception. *Psychological Bulletin*, *1*, 74–118.

Di Blasio, P., & Milani, L. (2008). Computer-mediated communication and persuasion: Peripheral vs. central route to opinion shift. *Computers in Human Behavior*, *24*, 798–815. doi:10.1016/j.chb.2007.02.011

Dorstyn, D. S., Mathias, J. L., & Denson, L. A. (2011). Psychosocial outcomes of telephone-based counseling for adults with an acquired physical disability: A meta-analysis. *Rehabilitation Psychology*, *56*, 1–14. doi:10.1037/a0022249

Dubrovsky, V. J., Kiesler, S. B., & Sethna, B. N. (1991). The equalization phenomenon: Status effects in computer-mediated and face-to-face decision-making groups. *Human–Computer Interaction*, *6*, 119–146.

Dunn, R. A., & Guadagno, R. E. (2012). My Avatar and me: Gender and personality predictors of avatar-self discrepancy. *Computers in Human Behavior*, *28*, 97–106.

Dwyer, C., Hiltz, S. R., & Passerini, K. (2007, August). *Trust and privacy concern within social networking sites: A comparison of Facebook and MySpace.* Paper presented at the 13th Americas Conference on Information Systems, Keystone, CO.

Eno, C. A., & Ewoldsen, D. R. (2010). The influence of explicitly and implicitly measured prejudice on interpretations of and reactions to black film. *Media Psychology*, *13*, 1–30.

Eveland, W. P., Jr. (2003). A "mix of attributes" approach to the study of media effects and new communication technology. *Journal of Communication*, *53*, 395–410. doi:10.1111/j.1460-2466.2003.tb02598.x

Ewoldsen, D. R., Eno, C. A., Okdie, B. M., Velez, J. A., Guadagno, R. E., & DeCoster, J. (2012). Effect of playing violent video games cooperatively or competitively on subsequent cooperative behavior. *Cyberpsychology, Behavior, and Social Networking*, *15*, 1–4.

Festinger, L., Pepitone, A., & Newcomb, T. (1952). Anonymity and aggressive driving behavior: A field study. *Journal of Abnormal Social Psychology*, *47*, 382–389.

Fisch, S. M. (2000). A capacity model of children's comprehension of educational content on television. *Media Psychology*, *2*, 63–92. doi:dx.doi.org/10.1207/S1532785XMEP0201_4

Fox, J., & Bailenson, J. N. (2009). Virtual self-modeling: The effects of vicarious reinforcement and identification on exercise behaviors. *Media Psychology*, *12*, 1–25.

Fulk, J., & DeSanctis, G. (1995). Electronic communication and changing organizational forms. *Organization Science*, *6*, 337–349.

Gentile, D. A., Anderson, C. A., Yukawa, S., Ihori, N., Saleem, M., Ming, L. K., . . . Sakamoto, A. (2009). The effects of prosocial video games on prosocial behaviors: International evidence from correlational, longitudinal, and experimental studies. *Personality and Social Psychology Bulletin*, *35*, 752–763. doi:10.1177/0146167209333045

Giles, D. C. (2003). *Media psychology*. Mahwah, NJ: Erlbaum.

Gitter, S. A., Ewell, P. J., Guadagno, R. E., Stillman, T. F., & Baumeister, R. F. (2013). Virtually justifiable homicide: The effects of prosocial contexts on the link between violent video games, aggression, and prosocial and hostile cognition. *Aggressive Behavior*, *39*, 346–354.

Goldberger, M. L., Maher, B. A., & Flattau, P. E. (Eds.). (1995). *Research-doctorate programs in the United States: Continuity and change*. Washington, DC: National Academy Press.

Green, M. C. (2004). Transportation into narrative worlds: The role of prior knowledge and perceived realism. *Discourse Processes*, *38*, 247–266.

Green, M. C., & Brock, T. C. (2000). The role of transportation in the persuasiveness of public narratives. *Journal of Personality and Social Psychology*, *79*, 401–421.

Greenberg, B. S., & Rampoldi-Hnilo, L. (2001). Child and parent responses to the age-based and content-based television ratings. In D. Singer & J. Singer (Eds.), *Handbook of children and the media* (pp. 621–634). Thousand Oaks, CA: Sage.

Guadagno, R. E., Blascovich, J., Bailenson, J. N., & McCall, C. (2007). Virtual humans and persuasion: The effects of agency and behavioral realism. *Media Psychology*, *10*, 1–22.

Guadagno, R. E., Blascovich, J., Beall, A. C., & Dimov, A. (2013). *Virtual environment technology and eyewitness recognition: Can virtual context reinstatement facilitate accuracy?* Manuscript submitted for publication.

Guadagno, R. E., & Cialdini, R. B. (2002). Online persuasion: An examination of gender differences in computer-mediated interpersonal influence. *Group Dynamics: Theory Research and Practice*, *6*, 38–51. doi:10.1037/1089-2699.6.1.38

Guadagno, R. E., & Cialdini, R. B. (2005). Online persuasion and compliance: Social influence on the Internet and beyond. In Y. Amichai-Hamburger (Ed.), *The social net: The social psychology of the Internet* (pp. 91–113). New York, NY: Oxford University Press.

Guadagno, R. E., & Cialdini, R. B. (2007). Persuade him by email, but see her in person: Online persuasion revisited. *Computers in Human Behavior*, *23*, 999–1015. doi:10.1016/j.chb.2005.08.006

Guadagno, R. E., Okdie, B. M., & Eno, C. A. (2008). Who blogs? Personality predictors of blogging. *Computers in Human Behavior*, *24*, 1993–2004.

Guadagno, R. E., Okdie, B. M., & Muscanell, N. L. (2013). Have we all Just Become "Robo-Sapiens"? Reflections on social influence processes in the Internet age. *Psychological Inquiry*, *24*, 1–9.

Guadagno, R. E., Okdie, B. M., Sagarin, B. J., DeCoster, J., & Rhoads, K. V. L. (2013). *Understanding the elusive vividness effect: A meta-analysis on vividness and persuasion*. Manuscript submitted for publication.

Guadagno, R. E., Rhoads, K. V. L., & Sagarin, B. S. (2011). Figural vividness and persuasion: Capturing the "elusive" vividness effect. *Personality and Social Psychology Bulletin*, *37*, 626–638.

Hall, S. (2001). Encoding/decoding. In M. G. Durham & D. M. Kellner (Eds.), *Media and cultural studies: Keyworks* (pp. 166–176). Malden, MA: Blackwell Publishers.

Hamburger, Y. A., & Ben-Artzi, E. (2000). The relationship between extraversion and neuroticism and the different uses of the Internet. *Computers in Human Behavior*, *16*, 441–449. doi:10.1016/S0747-5632(00)00017-0

Hartmann, T., Klimmt, C., & Vorderer, P. (2010). Presence and media entertainment. In C. C. Bracken & P. Skalski (Eds.), *Immersed in media: Telepresence in everyday life* (pp. 137–157). New York, NY: Routledge.

Hiltz, S. R., & Turoff, M. (1978). *The network nation*. Cambridge, MA: MIT Press.

Huesmann, L. R., Moise-Titus, J., Podolski, C., & Eron, L. D. (2003). Longitudinal relations between children's exposure to TV violence and their aggressive violent behavior in young adulthood: 1977–1992. *Developmental Psychology*, *39*, 201–221. doi:10.1037/0012-1649.39.2.201

Jenkins, H., Ford, S., & Green, J. (2013). *Spreadable media: Creating value and meaning in a networked culture*. New York, NY: New York University Press.

Jo, E., & Berkowitz, L. (1994). A priming effect analysis of media influences: An update. In J. Bryant & D. Zillmann (Eds.), *Media effects* (pp. 43–60). Hillsdale, NJ: Erlbaum.

Katz, E., Blumler, J. G., & Gurevitch, M. (1974). Utilization of mass communication by the individual. In J. G. Blumler & E. Katz (Eds.), *The uses and mass communications: Current perspectives on gratifications research* (pp. 19–32). Beverly Hills, CA: Sage.

Kavoori, A., & Arceneaux, N. (2006). *The cell phone reader: Essays in social transformation*. New York, NY: Peter Lang Publishing.

Kennedy, G. E. (2004). Promoting cognition in multimedia interactivity research. *Journal of Interactive Learning Research*, *15*, 43–61.

Klapper, J. T. (1960). *The effects of mass communication*. Glencoe, IL: Free Press.

Kramer, N. C., & Winter, S. (2008). Impression management 2.0: The relationship of self-esteem extraversion, self-efficacy, and self-presentation within social networking sites. *Journal of Media Psychology: Theories, Methods, and Applications*, *20*, 106–116. doi:10.1027/1864-1105.20.3.106

Krcmar, M., Grela, B., & Lin, K. (2007). Can toddlers learn vocabulary from television? An experimental approach. *Media Psychology*, *10*, 41–63. doi:10.1080/15213260701300931

Lang, A., & Ewoldsen, D. (2011). *The Routledge handbook of emotions and mass media* (1st ed.). New York, NY: Routledge.

Langer, E., & Rodin, J. (1976). The effects of choice and enhanced personal responsibility for the aged: A field experiment in an institutional setting. *Journal of Personality and Social Psychology*, *34*, 191–198.

Leary, M. R., & Kowalski, R. M. (1990). Impression management: A literature review and two-component model. *Psychological Bulletin*, *107*, 34–47. doi:10.1037/0033-2909.107.1.34

Lee, K. M., Peng, W., & Park, N. (2009). Effects of computer/video games and beyond. In J. Bryant & M. B. Oliver (Eds.),

Media effects: Advances in theory and research (3rd ed., pp. 551–566). New York, NY: Routledge.

Liu, Y., & Shrum, L. J. (2002). What is interactivity and is it always such a good thing? Implications of definition, person, and situation for the influence of interactivity on advertising effectiveness. *Journal of Advertising*, *31*, 53–64.

Livingstone, S. M. (1990). Interpreting a television narrative: How different viewers see a story. *Journal of Communication*, *40*, 72–85.

Lochman, J. E., FitzGerald, D. P., Gage, S. M., Kannaly, K., Whidby, J. M., Barry, T. D., . . . McElroy, H. (2001). Effects of a social-cognitive intervention for aggressive deaf children: The Coping Power program. *Journal of the American Deafness and Rehabilitation Association*, *35*, 39–61.

Lochman, J. E., Powell, N., Boxmeyer, C., Andrade, B., Stromeyer, S., & Jimenez-Camargo, L. A. (2012). Adaptations to the Coping Power program's structure, delivery settings, and clinician training. *Psychotherapy*, *49*, 135–142.

Lochman, J. E., Wells, K. C., & Murray, M. (2008). The Coping Power program: Preventive intervention at the middle school transition. In P. Tolan, J. Szapocznik, & S. Sambrano (Eds.), *Preventing youth substance abuse: Science-based programs for children and adolescents* (pp. 185–210). Washington, DC: American Psychological Association.

Marsh, E. J., & Fazio, L. K. (2006). Learning errors from fiction: Difficulties in reducing reliance on fictional stories. *Memory & Cognition*, *34*, 1140–1149.

Matheson, K., & Zanna, M. P. (1989). Persuasion as a function of self-awareness in computer-mediated communication. *Social Behavior*, *4*, 99–111.

McKenna, K. Y. A., & Bargh, J. A. (2000). Plan 9 from Cyberspace: The implications of the Internet for personality and social psychology. *Personality and Social Psychology Review*, *4*, 57–75. doi:10.1207/S15327957PSPR0401_6

Morley, D. (1999). The Nationwide audience: Structure and decoding. In D. Morley & C. Brunsdon (Eds.), *The Nationwide television studies* (pp. 111–228). London, England: Routledge.

Muscanell, N. L., & Guadagno, R. E. (2012). Make new friends or keep the old: Gender and personality differences in social networking use. *Computers in Human Behavior*, *28*, 107–112.

Naigles, L. R., & Hoff-Ginsberg, E. (1995). Input to verb learning: Evidence for the plausibility of syntactic bootstrapping. *Developmental Psychology*, *31*, 827–837. doi:10.1037/0012-1649.31.5.827

Naigles, L. R., & Mayeux, L. (2001). Television as incidental language teacher. In D. Singer & J. Singer (Eds.), *Handbook of children and the media* (p. 135). London, England: Sage.

Nelson, E.-L. (2010). Rural telepsychology services for children and adolescents. *Journal of Clinical Psychology*, *66*, 490–501.

Ogloff, J. R. P., & Vidmar, N. (1994). The impact of pretrial publicity on jurors: A study to compare the relative effects of television and print media in a child sex abuse case. *Law and Human Behavior*, *18*, 507–525. doi:10.1007/BF01499171

O'Keefe, D. J. (2013). The elaboration likelihood model. In J. P. Dillard & L. Shen (Eds.), *The Sage handbook of*

persuasion: Developments in theory and practice (2nd ed., pp. 137–149). Los Angeles, CA: Sage.

Okdie, B. M., Guadagno, R. E., Bernieri, F. J., Geers, A. L., & Mclarney-Vesotski, A. R. (2011). Getting to know you: Face-to-face versus online interactions. *Computers in Human Behavior, 27,* 153–159. doi:10.1016/j.chb.2010.07.017

Oliver, M. (2003). Mood management and selective exposure. In J. Bryant, D. Roskos-Ewoldsen, & J. Cantor (Eds.), *Communication and emotion: Essays in honor of Dolf Zillmann* (pp. 85–106). Mahwah, NJ: Erlbaum.

Petty, R. E., & Cacioppo, J. T. (1979). Issue-involvement can increase or decrease persuasion by enhancing message relevant cognitive responses. *Journal of Personality and Social Psychology, 37,* 1915–1926.

Petty, R. E., & Cacioppo, J. T. (1984). The effects of involvement on responses to argument quantity and quality: Central and peripheral routes to persuasion. *Journal of Personality and Social Psychology, 46,* 69–81.

Poe, M. (2011). *A history of communications: Media and society from the evolution of speech to the Internet.* Cambridge, England: Cambridge University Press.

Postmes, T., Spears, R., Sakhel, K., & de Groot, D. (2001). Social influence in computer-mediated communication: The effects of anonymity on group behavior. *Personality and Social Psychology Bulletin, 27,* 1243–1254. doi:10.1177/01461672012710001

Rice, M. L., Huston, A. C., Truglio, R., & Wright, J. (1990). Words from "sesame street": Learning vocabulary while viewing. *Developmental Psychology, 26,* 421–428. doi:10.1037//0012-1649.26.3.421

Rodriguez, O. (2012). MOOCs and the AI-Stanford like Courses: Two successful and distinct course formats for massive open online courses. *European Journal of Open, Distance, and E-Learning, 1.* Retrieved from http://www.eurodl.org/?article=516

Roskos-Ewoldsen, D. R. (2004). The psychology of the media: A missing program. *Contemporary Psychology, 49,* 560–562.

Roskos-Ewoldsen, D. R., & Roskos-Ewoldsen, B. (2010). Message processing. In C. Berger, M. Roloff, & D. R. Roskos-Ewoldsen (Eds.), *Handbook for communication science* (2nd ed., pp. 129–144). Thousand Oaks, CA: Sage.

Roskos-Ewoldsen, D. R., Roskos-Ewoldsen, B., & Carpentier, F. D. (2009). Media priming: An updated synthesis. In J. Bryant & M. B. Oliver (Eds.), *Media effects: Advances in theory and research* (pp. 74–93). New York, NY: Routledge.

Rozin, P. (2007). Exploring the landscape of modern academic psychology: Finding and filling the holes. *American Psychologist, 62,* 754–766.

Saenz, L. M., & Fuchs, L. S. (2002). Examining the reading difficulty of secondary students with disabilities: Expository versus narrative text. *Remedial and Special Education, 21,* 31–41.

Savage, J., & Yancey, C. (2008). The effects of media violence exposure on criminal aggression: A meta-analysis. *Criminal Justice and Behavior, 35,* 772–791. doi:10.1177/0093854808316487

Schlenker, B. R. (1980). *Impression management: The self-concept, social identity, and interpersonal relations.* Belmont, CA: Brooks/Cole.

Schmidt, M. E., Crawley-Davis, A. M., & Anderson, D. R. (2007). Two-year-olds' object retrieval based on television: Testing a perceptual account. *Media Psychology, 9,* 389–409. doi:10.1080/15213260701291346

Schneider, E. F., Lang, A., Shin, M., & Bradley, S. D. (2004). Death with a story: How story impacts emotional, motivational, and physiological responses to first-person shooter video games. *Human Communication Research, 30,* 361–375.

Sherry, J. L. (2001). The effects of violent video games on aggression: A meta-analysis. *Human Communication Research, 27,* 409–431. doi:10.1111/j.1468-2958.2001.tb00787.x

Singer, J. L., & Singer, D. (1998). Barney & friends as entertainment and education: Evaluating the quality and effectiveness of a television series for preschool children. In J. K. Asamen & G. L. Berry (Eds.), *Research paradigms, television, and social behavior* (pp. 305–367). Thousand Oaks, CA: SAGE.

Slater, M. D. (2007). Reinforcing spirals: The mutual influence of media selectivity and media effects and their impact on individual behavior and social identity. *Communication Theory, 17,* 281–303. doi:10.1111/j.1468-2885.2007.00296.x

Slater, M. D., Henry, K. L., Swaim, R. C., & Anderson, L. L. (2003). Violent media content and aggressiveness in adolescents: A downward spiral model. *Communication Research, 30,* 713–736. doi:10.1177/0093650203258281

Sparks, J. R., Areni, C. S., & Cox, K. C. (1998). An investigation of the effects of language style and communication modality on persuasion. *Communication Monographs, 2,* 108–125.

Sproull, L., & Kiesler, S. (1991). *Connections: New ways of working in the networked organization.* Cambridge, MA: MIT Press.

Steuer, J. (1992). Defining virtual reality: Dimensions determining telepresence. *Journal of Communication, 43,* 73–93. doi:10.1111/j.1460-2466.1992.tb00812.x

Sundar, S. S., Oh, J., Kang, H., & Sreenivasan, A. (2013). How does technology persuade? Theoretical mechanisms for persuasive technologies. In J. P. Dillard & L. Shen (Eds.), *The Sage handbook of persuasion: Developments in theory and practice* (2nd ed., pp. 388–404). Thousand Oaks, CA: Sage.

Thomasch, P. (2007). *1 in 3 Americans watch TV away from home: Study* [Electronic Version]. Reuters. Retrieved from http://www.reuters.com/article/domesticNews/idUSN0437764920070404

Thorndyke, P. W. (1977). Cognitive structures in comprehension and memory of narrative discourse. *Cognitive Psychology, 9,* 77–110. doi:http://dx.doi.org/10.1016/0010-0285(77)90005-6

U.S. Census. (2010). *Seven years of media usage* (Statistical abstract). Retrieved from http://www.census.gov/compendia/statab/2010/tables/10s1094.pdf

Vazire, S., & Gosling, S. D. (2004). e-Perceptions: Personality impressions based on personal websites. *Journal of Personality and Social Psychology, 87,* 123–132.

Velez, J. A., Mahood, C., Ewoldsen, D., & Moyer-Guse, E. (in press). Ingroup versus outgroup conflict in the

context of violent video game play: The effect of cooperation on increased helping and decreased aggression. *Communication Research*. doi:10.1177/0093650212456 202

Vidmar, N., & Rokeach, M. (1974). Archie Bunker's bigotry: A study in selective perception and exposure. *Journal of Communication*, *24*, 36–47.

Vorderer, P., Steen, F. F., & Chan, E. (2006). Motivation. In J. Bryant & P. Vorderer (Eds.), *Psychology of entertainment* (pp. 3–17), Mahwah, NJ: Erlbaum.

Westin, S., Mundorf, N., & Dholakia, N. (1993). Exploring the use of computer-mediated communication: A simulation approach. *Telematics and Informatics*, *10*, 89–102. doi:10.1016/0736-5853(93)90034-2

Williams, J. P. (1993). Comprehension of students with and without learning disabilities: Identification of narrative themes and idiosyncratic text representation. *Journal of Educational Psychology*, *85*, 631–641.

Wilson, J. R., & Bornstein, B. H. (1998). Methodological considerations in pretrial publicity research: Is the medium the message? *Law and Human Behavior*, *5*, 585–597.

Wilson, R. E., Gosling, S. D., & Graham, L. T. (2012). A review of Facebook research in the social sciences. *Perspectives on Psychological Science*, *7*, 203–220. doi:10.1177/1745691612442904

Witmer, B. G., Jerome, C. J., & Singer, M. J. (2005). The factor structure of the Presence Questionnaire. *Presence: Teleoperators and Virtual Environments*, *14*, 298–312.

Witmer, B. G., & Singer, M. J. (1998). Measuring presence in virtual environments: A Presence Questionnaire. *Presence: Teleoperators and Virtual Environments*, *7*, 225–240.

Worchel, S., Arnold, S., & Baker, M. (1975). The effects of censorship on attitude change: The influence of censor and communicator characteristics. *Journal of Applied Social Psychology*, *5*, 227–939.

Yee, N. (2006). Motivations for play in online games. *Cyberpsychology & Behavior*, *9*, 772–774. doi:10.1089/cpb.2006.9.772

Ziegler, R., Arnold, F., & Diehl, M. (2007). Communication modality and biased processing: A study on the occasion of the German 2002 election TV debate. *Basic and Applied Social Psychology*, *29*, 175–185.

Zimbardo, P. G. (1969). The human choice: Individuation, reason, and order vs. deindividuation, impulse and chaos. In W. J. Arnold & D. Levine (Eds.), *Nebraska symposium on motivation* (pp. 237–307). Lincoln: University of Nebraska Press.

Zuckerman, M., DePaulo, B. M., & Rosenthal, R. (1981). Verbal and nonverbal communication of deception. In L. Berkowitz (Ed.), *Advances in experimental social psychology* (Vol. 14, pp. 1–59). New York, NY: Academic Press.