

Applications of Selective Exposure and Attention to Information for Understanding Health and Health Disparities

ALLISON EARL and CHRISTINA NISSON

Abstract

In this essay, we discuss how social psychological work on selective exposure and attention can be used to understand information selection decisions in a health context. In particular, we begin with an overview of the selective exposure and attention literatures, including a summary of literature suggesting that people are more likely to seek out (selective exposure) and pay attention to (selective attention) information they agree versus disagree with. We then discuss various motives that may influence information selection and attention. Finally, we conclude with a summary of how the work on selective exposure and attention can be brought to bear on health message design and reduction of health disparities.

INTRODUCTION

Interventions designed to change health behaviors often assume that the people who could most benefit from the intervention are the ones receiving the message. Ironically, but perhaps not surprisingly, people are less likely to seek out and pay attention to messages that advocate changing what they are currently doing. Interventionists may, in fact, be preaching to the choir, rather than reaching target audiences. Unfortunately, this suggests limited efficacy of health intervention programs that could ultimately be successful if received by target audiences.

FOUNDATIONAL RESEARCH

What do you do if you want to persuade people to change their attitudes or behaviors? For instance, what is the best way to convince someone that smoking is bad for them, or to engage in safer-sex behaviors such as condom use?

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One strategy that has received much attention by both persuasion researchers and lay theorists alike has been to design an advertising campaign or intervention program directed at changing a specific set of beliefs or behaviors (e.g., “Don’t Smoke” or “Use a Condom”). However, this strategy is only effective up to the point that the target audience actually sees and pays attention to the message. Unfortunately, 60 years of social psychological research suggests that exposure and attention to persuasive messages may be critical barriers to address, as people are more likely to both seek out and pay attention to information they agree with compared to information they disagree with (Eagly, Chen, Chaiken, & Shaw-Barnes, 1999; Festinger, 1964; Frey, 1986; Hart *et al.*, 2009). One consequence of this bias is that persuasive campaigns may simply be preaching to the choir, without reaching the audiences for whom they are intended.

Preferential selection of, and attention to, messages that are supportive (vs challenging) of one’s attitudes or behaviors are well-established phenomena in the social psychological literature. Recent meta-analytic evidence suggests that people show a selective exposure bias by preferring information that is supportive (vs challenging) of their own attitudes or behaviors ($d = 0.36$; Hart *et al.*, 2009). Similarly, people are more likely to store and recall attitude-supportive versus attitude-challenging information from memory, a phenomenon labeled selective attention ($d = 0.23$; Eagly *et al.*, 1999).

Message reception by target audiences may be difficult because people selectively attend to information. No matter how many times an intervention program is offered or prevention messages are played in the waiting room of a health clinic, clients can always tune out the message. For instance, prejudiced people are less likely to attend to anti-prejudice propaganda than nonprejudiced people (Cooper & Jahoda, 1947). Furthermore, heavy drinkers tend to watch more advertisements for alcohol than do light drinkers and nondrinkers (Perrissol, Boscher, Cerclé, & Somat, 2005). In the area of human immunodeficiency virus (HIV)-prevention, participants with higher motivation to use condoms, stronger condom use behavioral skills, and more frequent past condom use are more likely to accept an HIV-prevention counseling session than participants with lower scores on these dimensions (Earl *et al.*, 2009).

PREDICTING ATTENTION TO HEALTH INFORMATION

Several models have been proposed to conceptualize the process from information reception to behavior change (Greenwald, 1968; McGuire, 1968; Petty & Cacioppo, 1986). According to McGuire’s (1968) reception-yielding model, receiving a message can be separated into three discrete steps: exposure, attention, and comprehension. In this model, exposure involves

initial presentation of a persuasive message, attention concerns whether or not participants choose to attend to the information, and comprehension entails whether or not participants understand the persuasive message. In the case of health information, it is rarely the case that people have not been exposed to at least some information. On the contrary, prior work suggests that people often feel inundated with informational overload (Bargh & Thein, 1985; Edmunds & Morris, 2000), particularly in a health context (Cline & Haynes, 2001; Hall & Walton, 2004). Furthermore, health clinics and hospitals frequently play educational videos in their waiting rooms to give clients additional exposure to messages, and high school students are often required to go through health classes that feature health education (Centers for Disease Control and Prevention, 2012). However, presentation of information does not necessarily ensure that participants will pay attention to messages.

Models of attention frequently differentiate information processing as a function of amount of attentional resources allocated to a particular stimulus. For instance, Broadbent's (1958) filter theory of early selection posits that sensory stimuli are selectively filtered, with attended stimuli being further processed and unattended stimuli being summarily ignored. In contrast, Deutsch and Deutsch (1963) posit a late disengagement model in which all stimuli are initially processed, at least until an object is identified, at which point selective processing occurs. Work by Posner and Peterson (1990) integrated these two seeming disparate viewpoints by suggesting that three attentional systems of alerting, orienting, and executive control may operate independently. In particular, alerting is related to achieving and maintaining a state of alertness, orienting refers to selection of information from sensory input, and executive control is defined as resolving conflict among responses (Posner & Peterson, 1990).

MEASURING SELECTIVE EXPOSURE AND SELECTIVE ATTENTION

Selective exposure is frequently measured by the amount of supportive (congenial) versus challenging (uncongenial) information participants choose to view. In a typical selective exposure paradigm, participants may be asked to select from among arguments on both sides of an issue (e.g., the validity of an intelligence test: Frey & Stahlberg, 1986). In this case, selective exposure would be calculated by creating a difference score between the number of congenial articles selected and the number of uncongenial articles selected. Selective exposure can also be measured by recording whether or not participants enroll in an intervention program (Earl *et al.*, 2009), or if people recall seeing a public service announcement on television (Siska, Jason, Murdoch, Yang, & Donovan, 1992).

Common measures of selective attention include self-reported attention to a message (e.g., “How much attention did you pay to the message”), recall and recognition measures of message content (e.g., “What did you read about”), as well as behavioral measures of amount of time spent reading a message or coders’ observation of overt attention to a message. Recently, psychophysiological measures have been used to measure eye-gaze, as well as brain electrical response to messages [e.g., event-related potentials (ERPs) or functional magnetic resonance imaging (fMRI); Falk, 2010; Ruiters, Kessels, Jansma, & Brug, 2006]. These approaches have distinct advantages and drawbacks. For instance, self-report measures are cheap and easy to administer, but are subject to biases in reporting (Nisbett & Wilson, 1977; Schroder, Carey, & Vanable, 2003). Physiological measures (e.g., eye-tracking, ERP, and fMRI) are expensive and open to interpretation, but are not dependent on participant’s conscious awareness of attentional allocation.

MOTIVES UNDERLYING SELECTIVE EXPOSURE AND SELECTIVE ATTENTION

Both selective exposure and selective attention are driven by defense, impression, and accuracy motives (Chaiken, Giner-Sorolla, & Chen, 1996; Chaiken, Liberman, & Eagly, 1989; Hart *et al.*, 2009). For instance, activation of a defense motive drives people to buffer current beliefs and behaviors from attack, and promotes avoidance of information that threatens current views and approach to information that supports current views. Activation of an impression motive heightens concerns about how selecting or attending to information would influence perceptions about the self, and would facilitate the selection of information that would help convey a desired identity or image to an audience and avoidance of information that undermines a desired identity (Schlenker, 1980). In contrast, activation of an accuracy motive drives people to form and maintain beliefs and behaviors that are consistent with relevant information, and would prompt selection of information evenhandedly, and as well as a preference for high quality compared to low quality information regardless of its stance on an issue.

There are several factors that may spark defense motivation and subsequent avoidance of uncongenial information. For instance, defense motives are likely to operate when participants feel committed to a decision (Brehm & Cohen, 1962; Kiesler, 1971), when the issue is relevant to important values (Johnson & Eagly, 1989), or when participants are close minded (Adorno, Frenkel-Brunswick, Levinson, & Sanford, 1950). In addition, dispositional perceptions of one’s inability to defend personal views from persuasive attacks may promote avoidance of dissenting opinions (Albarracín & Mitchell, 2004; Albarracín, Durantini, Earl, Gunnoe, & Leeper, 2008). In contrast, increasing one’s perceived ability to defend cherished beliefs may facilitate approach

to attitude-inconsistent information (Albarracín, Leeper, Earl, & Durantini, 2008; Albarracín & Mitchell, 2004). More generally, receiving a threat to the self immediately before exposure to either supporting or threatening information increases avoidance of threatening information (Frey, 1986), as does receiving a threat after recently reporting a position or belief (Festinger, 1964). In the context of health information seeking, examining perceptions of one's ability to defend oneself may be particularly relevant for those with chronically low perceived power or self-efficacy, as these groups are often the target audiences of health promotion campaigns. A second factor that may influence avoidance of dissenting opinions is commitment to the beliefs or behaviors in question. For instance, participants avoid information that challenges their current beliefs or behaviors, but only for those beliefs that are strongly held and thus represent a threat (Brehm & Cohen, 1962). Similarly, making participants self-aware may produce avoidance of threatening information, presumably because heightened awareness of one's own beliefs should lead to unwillingness to be inconsistent, even to the self (Diener & Srull, 1979). In the case of health promotion, heightened self-awareness may trigger beliefs that threatening health messages (i.e., messages that contradict one's self-views) are irrelevant and thus not deserving of attention.

Furthermore, the decision to attend to health information may be based, in part, on the impression that seeking this information might make on others. The focus on external evaluations triggered by impression motives is often separate from the focus on internal evaluations triggered by defense motives. According to impression management theory, people are motivated to control the perceptions others have of them (Schlenker, 1980) and focus on the interpersonal outcomes of a given behavior (Chaiken, Giner-Sorolla, *et al.*, 1996). As a result, people are aware of the views of others and take those views into account before they act (Chaiken, Giner-Sorolla, *et al.*, 1996; Schlenker, 1980). There are likely several factors that trigger impression motives. For instance, chronic sensitivity to rejection entails heightened awareness of others and their evaluations of one's behavior (Downey & Feldman, 1996). Similarly, the presence of others may also influence the activation of impression motives by heightening norms about how to behave (Ajzen & Fishbein, 2005; Goffman, 1963; Shah, 2003). In addition, telling participants that they will be discussing an issue after reading information also prompts activation of an impression motive and a focus on self-presentational concerns (Leippe & Elkin, 1987). In contrast, heightening accuracy concerns in addition to an impression motive manipulation mitigates bias in information search (Lundgren & Prislin, 1998).

In contrast, accuracy motives may have opposing effects on information processing compared to defense and impression motives. In particular, activation of an accuracy motive should increase seeking of high quality versus

low quality information, regardless of its congeniality (Lowin, 1967, 1969; Lundgren & Prislín, 1998). Accuracy motives are likely to operate when the issue is tied to an outcome or performance (e.g., you have to give a speech later on the topic; Johnson & Eagly, 1989), and when the utility of the information is high (Canon, 1964; Freedman, 1965).

CUTTING-EDGE RESEARCH

APPLICATIONS TO HEALTH: FOCUS ON MESSAGE CHARACTERISTICS

The principles of selective exposure and attention can be applied to increase the efficacy of public health campaigns by ensuring that target audiences actually receive the message. One strategy to increase attention to health promotion campaigns has been to focus on features of the message that may facilitate attention. For instance, patients who were discharged from the ER with wound-care information that contained both text and pictures were more likely to report reading the information than patients who received the text information alone (Delp & Jones, 1996). More broadly, a review of graphics on attention to health information suggest that pictures linked to written or spoken text can significantly increase attention to and recall of health information when compared to text alone (Houts, Doak, Doak, & Loscalzo, 2006).

Perhaps the most widely researched message characteristic in selective attention to health information is the presence of threatening information. Public health campaigns often use threatening information as a means of conveying risk and reducing the occurrence of an unhealthy behavior (e.g., graphic anti-smoking ads). Unfortunately, however, numerous studies now indicate that participants may be less likely to attend to messages containing threatening information compared to similar low threat messages (Albarracín *et al.*, 2005; Brown & Richardson, 2012; Earl & Albarracín, 2007; Kessels, Ruiter, & Jansma, 2010). For example, Brown and Richardson (2012) found that anti-alcohol persuasive messages paired with distressing images resulted in lower message gaze time, which further resulted in lower intentions to reduce drinking in the following three months compared to the same messages paired with less distressing images. Furthermore, meta-analytic evidence in the area of HIV-prevention suggests that fear appeals decrease learning about health recommendations, both immediately following the intervention as well as longitudinally (Earl & Albarracín, 2007). Other highly researched message characteristics in this area include the benefit of tailored versus nontailored interventions (Kessels *et al.*, 2010; Ruiter *et al.*, 2006), gain versus loss framed health messages (O'Malley & Latimer, 2012; Rothman & Salovey, 1997), and novel versus familiar information (Fox, Krugman, Fletcher, & Fischer, 1998; Krugman, Fox, Fletcher, Fischer, & Rojas, 1994).

APPLICATIONS TO HEALTH: INTERACTION BETWEEN AUDIENCE AND MESSAGE CHARACTERISTICS

Research on selective attention in public health has also focused on the interaction between audience and message characteristics. For instance, investigating how specific audiences (e.g., adolescents) may process messages related to specific health topics (e.g., cigarette ads; Krugman *et al.*, 1994). In addition, meta-analytic work suggests that the decision whether or not to enroll in an intervention program may be based in part on if the intervention program meets individual preferences. For example, men are more likely to enroll in HIV-prevention intervention programs when they provide instrumental and financial resources (e.g., payments), whereas women are more likely to enroll when programs are run in a group format (vs individual counseling; Durantini & Albarracin, 2009). Furthermore, disenfranchised groups prefer interventions led by experts compared to peers (Durantini, Albarracin, Mitchell, Earl, & Gillette, 2006). In addition, acceptance of low investment intervention strategies (e.g., brochures) can lead to greater acceptance of high investment intervention strategies (e.g., counseling sessions; Albarracin *et al.*, 2008). This work lends support to the notion that taking both the message and the audience into consideration when designing an intervention program is critical to success.

Beyond demographic variables, another example of work examining the interplay of message and audience characteristics involves the study of attention to health information as a function of health optimism. In particular, those high versus low in health optimism are more likely to attend to threatening health information (Aspinwall & Brunhart, 1996). Furthermore, understanding that audiences may differentially react to features of health message is a key tenant of the message-framing effects literature (e.g., Rothman & Salovey, 1997). Although the dependent measures in these studies are often intention change, rather than attention, this work may be brought to bear on understanding the parameters of selective exposure and selective attention in a health context.

APPLICATIONS TO HEALTH: HEALTH DISPARITIES

Disenfranchised groups often bear the brunt of disease burden (National Association of Chronic Disease, 2010). For instance, African-Americans relative to European-Americans carry a disproportionate weight of a wide variety of conditions including heart disease, hypertension, cancer, diabetes, stroke, and HIV (Centers for Disease Control and Prevention, 2005). These disparities in health outcomes across groups may be triggered by myriad causes. For instance, African-Americans compared to European-Americans

may have systemically less access to healthcare, incomplete or nonexistent insurance coverage, or may simply not receive necessary medical procedures (Agency for Healthcare Research and Quality, 2000; Center for Health Equity Research and Promotion, 2010). From a public health perspective, the existence of health disparities suggests that work is needed to ensure that *all* people receive needed medical care and prevention services.

Although past work has been done to address health disparities at a system level (Agency for Healthcare Research and Quality, 2000; Center for Health Equity Research and Promotion, 2010), comparatively little has been done to examine how individual level factors may also perpetuate these gaps. For instance, health disparities may also be due in part to discomfort and unwillingness to approach health information by African-Americans. One possibility is that attention to HIV-prevention information may be modulated by how identity-congruent attending to information is perceived to be. Work by Oyserman, Fryberg, and Yoder (2007) suggests that health disparities for African-American and Latino children may be explained, in part, by the perceived discrepancy between engaging in healthy behaviors and children's currently accessible identity. Other work in the realm of HIV-prevention suggests that African-American clients of a public health clinic report that reading a brochure or watching a video in a health-department waiting room is identity incongruent and potentially stigmatizing, as others in the waiting room may infer that the reader/watcher is HIV-positive and/or engages in behavior that puts them at risk for HIV infection (e.g., uses drugs or has promiscuous sex; Albarracín, Durantini & Earl, 2006). Taken together, this work suggests that one crucial consideration of whether or not African-Americans will attend to health information may be how identity-congruent health information is perceived to be for African-Americans. For instance, if information is perceived to be identity-congruent (i.e., reading health information is something "someone like me" does), one might predict increased attention to the information. In contrast, if information is perceived to be identity-*incongruent* (i.e., people like me do not pay attention to health information), one might instead predict *decreased* attention to the information. If this is the case, one potential intervention point to minimize health disparities may be to begin by closing the attention gap to health information for African-Americans compared to European-Americans by ensuring that attention to health information is perceived as identity-congruent.

KEY ISSUES FOR FUTURE RESEARCH

Determining why individuals are selectively attending to health information is only the first step in increasing the efficacy of public health campaigns.

Future research must also address ways to mitigate the motives underlying selective exposure and selective attention as a way of increasing the efficacy of health campaigns. Recent research on defense motives has shown that decreasing levels of controlling language in health messages increases attention to the message (Miller, Lane, Deatrack, Young, & Potts, 2007). It may also be possible to increase attention to health messages without editing the message. For instance, self-affirmation decreases the attentional bias away from self-relevant threat information (Howell & Shepperd, 2012; Klein & Harris, 2009). In addition, impression motives could drive participants toward behavior-consistent or behavior-inconsistent information depending on the identity one is trying to convey. Presumably, encouraging participants to appear open-minded may increase approach to behavior-inconsistent information. Future public health research would do well to focus on lessening the negative impact of defense and impression motives on attention to health information.

Finally, it has become increasingly clear that attention to information is an essential component of intervention effectiveness. Recently, meta-intervention methods have been designed to increase attention by means of empowering potential audiences. A *meta-intervention* is a supplemental program designed to increase participation in a pre-existing preventive program (Albarracín *et al.*, 2008). Meta-interventions have been successfully used by Albarracín *et al.* (2008) to increase acceptance of an HIV-relevant video as well as enrollment in an HIV-prevention counseling session. In this case, determining the barriers to attention could aid in the design of meta-interventions to increase exposure and attention to messages designed to change health behaviors. Thus, this work provides a critical first step to reduce barriers to attention to health information.

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ALLISON EARL SHORT BIOGRAPHY

Allison Earl received her BA in Anthropology and BS in Psychology from the University of Florida, and her PhD in Psychology from the University of Illinois at Urbana-Champaign. She is an Assistant Professor of Social Psychology at the University of Michigan, and Director of the University of Michigan Health, Attitudes, and Influence Lab (HAILab). She is also a Faculty Associate at the University of Michigan's Research Center for Group Dynamics in the Institute for Social Research, and a Faculty Affiliate of the Joint Program in Social Work and Psychology. The overarching goal of Dr. Earl's research program is to better understand what we pay attention to and why, and how

to best use this knowledge to increase attention to health promotion programs, particularly for high-risk audiences. More information about her current research is available on her website: <http://hailab.psych.lsa.umich.edu/>

CHRISTINA NISSON SHORT BIOGRAPHY

Christina Nisson received her BA in Psychology and Economics from Cornell University in 2009 and her MS and PhD in Social Psychology from the University of Michigan in 2011 and 2014, respectively. Broadly, Christina is interested in applying social psychological research to the study of health messaging and health behaviors. Her primary line of research examines the role of select health message characteristics (e.g., approach vs avoidance goals; action vs inaction orientation) on message processing and healthy eating behaviors.

RELATED ESSAYS

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