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Selection and Transmission Processes for Information in the Emerging Media Environment: Psychological Motives and Message Characteristics

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Abstract

The emerging media environment introduced fundamental changes in the quality and format of information available to the public, which can now flexibly seek, alter, and disseminate the information they receive. Therefore, the two processes of information selection and information retransmission are crucial for understanding the reach of any information available in the online information environment. From this starting point, we examine the common psychological motives driving information selection and transmission of attitude-relevant information: Defense and accuracy motives adding a focus on interpersonal motives. We also review message factors that can activate psychological motives leading to selection of retransmission of information, such as the desire for novelty and emotional stimulation. We speculate about the directions for the next generation of research necessary to understand exposure as a core outcome in media effects research and theory.

Keywords

selection; transmission; exposure; accuracy motive; defense motive; relationship management; impression management; attitude; media; selective exposure; new media

The Emerging Media Environment

The public information environment is being transformed in several historically unprecedented ways. Public information is increasingly narrow-cast in content, balkanized in ideology, and subject to a 24-7 news cycle and constant commentary by every echelon of the public from elite to masses (Smith, Niederdeppe, Blake, & Cappella, 2013). In addition to the occasional commentary about current news over dinner, interpersonal communication about media information now spans limited and unlimited networks of connectivity via Facebook, Twitter, YouTube, and myriad emerging platforms. Instead of a few major media conglomerates (e.g., newspapers, TV networks) controlling the production of public

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information, previously anonymous individuals can now generate and respond to institutions and the information they disseminate. Moreover, simple exposure to single news stories or public information created by social institutions is no longer a reasonable or fair description of what individuals experience when they consume news and public information. They still encounter news, entertainment, and advertising across traditional and newer media platforms, but they also search for, create, disseminate, and exchange information—generating supportive and oppositional responses to media content at every step of that cycle.

In this paper, we examine one significant implication of the macro trends driving the public information environment, namely (a) *narrow casting* of media content for increasingly specialized audiences; (b) the *speed*, ease, and rapid response of a 24/7 news and information environment allowing, even demanding, immediate reaction; and (c) the *participation* of the public in commenting on and contributing to what have been traditionally the domains of elite, institutionalized sources of news, information, and entertainment. These three trends are widely acknowledged by theorists (Jenkins, 2008; Jenkins, Ford, & Green, 2013; Napoli, 2011) and researchers in health (Smith et al., 2013; Southwell, 2013) and politics (Bennett & Iyengar, 2008; Mutz & Young, 2011). Acknowledging these fundamental changes seems a must for useful research and theory on the impact of emerging media.

As we ponder alterations in the way media present their information to the public and even what constitutes “information from the media” in the mind of the public, numerous challenges to the research community demand attention. Research in the face of an emergent media must still answer the same basic questions about how to best understand, explain, and predict the consequences of the public information environment for social, health, financial, and political goals. In particular, although effectiveness and efficiency are key (Cappella & Hornik, 2010), exposure is the *sine qua non* of media effects, attitude change, and persuasive communication (Albarracín & Mitchell, 2004; Albarracín & Vargas, 2010; Hart et al., 2009; Hornik, 2002; Noguchi, Albarracín, Durantini, & Glasman, 2007; Snyder & Hamilton, 2002). Given well targeted exposure, the content and format of the information must be presented effectively so that it is engaging, encodable, retrievable, convincing, and persuasive (Albarracín, 2002; Cappella & Hornik, 2010; Eagly & Chaiken, 1993; Johnson, Maio, & Smith-McLallen, 2005). But without an adequate understanding and measurement of exposure, explaining and predicting the consequences of public information is futile.

Our core argument is that the emerging media demand a focus on the selection and retransmission of information as viral information, memes, and information cascades achieve prominence (Cappella, 2002). Media exposure must be reframed as a significant outcome of research on media effects. We begin this process by focusing on what is known about the psychological motivations driving selection and transmission of information and on the message factors that can enhance (or retard) those motives.

Exposure to information is of particular importance for new media for several reasons. First, narrow-casting has and will continue to have profound consequences for selective exposure to and avoidance of information. Second, the speed with which information can be diffused

through online and interpersonal networks raises central questions about the retransmission of any single informational event through social media outlets and through various forms of re-posting and reconnection through more established formats such as blogs and online commentary. Third, user generated content including both the substantive commentary deployed in textual, visual, and auditory forms as well as the evaluative responses to online information (e.g. “likes”) become locations where an initial exposure is multiplied through various forms of re-exposure. In addition to being a place to retransmit original information, commentary by the media’s audiences themselves is a source of information subject to selective exposure and selective retransmission.

These considerations lead us to raise a variety of research questions about exposure. Of course, ours is not the only voice making this appeal. Bennett and Iyengar (2008) have argued for the importance of research and new theory in selective exposure to political information, as has Garrett (2013). A special double issue of *Communication Methods and Measures* is devoted to new empirical approaches to selective exposure (Hayes, 2013). A cursory examination of articles on news, dynamics, virality, and cascades turns up a huge base of research almost all of which is appearing in the computer science and engineering fields rather than the communication field. Neither does our approach imply or assume that research into selectivity and retransmission as the basis for exposure has been ignored by researchers. Certainly both have been studied, whether the approach is via predilections of personality (e.g. Reinecke et al., 2012), ideology (Stroud, 2011), news diffusion (Rogers, 2000; Rosengren, 1973), or identity (Slater, 2007) among other lines of work. Theoretical work on information flow (E. Katz, 1957; E. Katz & Lazarsfeld, 2006), the diffusion of innovations and information (Rogers, 2003), and theories of public opinion formation and circulation (Price, 1992) have prominently guided the research agenda. These models include both mass media exposure and the possibility of interpersonal communication about that exposure. However, one or the other of the processes has been given prominence. For example, Rogers’ work emphasizes the importance of social influence (or social contagion), whereas Katz’ work on media functions and information flow focuses on selectivity and opinion leaders, respectively. Price sought to balance selection and transmission but the casual factors in selection and transmission were not explored in detail. The new public information environment simply reinvigorates our need to examine the same issues that foundational thinkers in the field have raised before.

To explore what exposure in emerging media means, we first define information’s reach through two core processes: information selection and information transmission. These processes are then unpacked through traditional and expanded models of psychological drivers of selection and transmission in which the role of the audience’s a priori attitudes has been prominent. Recent research into factors linked to these psychological drivers is summarized and finally new research questions that bring together attitudinal and interpersonal motives for both selection and transmission are posed. We conclude that the motivational factors implicated in selection and transmission are similar, thereby setting the foundation for the development of theory about reach. We hope to help set the basis for the next generation of research and to identify the boundaries for theorizing about exposure as the combination of selection and retransmission.

Exposure as "Reach"

In the emerging media environment, the reach of a particular piece of information – for example, a news story from a main stream source – is a function of the likelihood that the item is selected by a receiver in the target population (ordinary direct exposure, called hereafter *primary exposure*) and the probability that the receiver will retransmit that item to others in the receiver's pool of followers (exposure through retransmission, named here *secondary exposure*). The item can also be reposted in another venue (e.g., a news story in a blog; a Facebook page). All these means – and ones yet to be invented – offer the opportunity for the secondary exposure that is the hallmark of the new media environment. This potentially very complicated process can be expressed simply: The "reach" of any informational item in the media environment is a joint product of its selection by members of the audience and its retransmission by the audience to others using whatever means are available within the space of transmission options. In other words, in the emerging media environment, reach of information is not simply the sum of those exposed but must take into account the probability that the recipient retransmits the information through some platform to others.

Research on media effects has always included studies in which members of the target audience could retransmit primary information through interpersonal means (E. Katz & Lazarsfeld, 2006; Southwell & Yzer, 2007). News diffusion studies are not new (Rosengren, 1973). But given the ease with which an original message or some variant of that message or a link to the message can be retransmitted via multiple platforms, the explicit acknowledgement that reach will depend on retransmission probabilities is a necessity if we are to begin to understand the realities of exposure in the emerging media environment. Understanding the forces driving and retarding retransmission, then, is as important as understanding the forces driving initial selection and avoidance.

Furthermore, reach is a *product* of two probabilities – one for selection and one for retransmission. As specific predictors of selection and retransmission probabilities are presented in the review that follows, their product can produce complex and unanticipated outcomes for the reach of a particular bit of information. For example, an anxiety-provoking news item about the health consequences of smoking might be selected by a smoker considering quitting but never be forwarded to other smokers in the smoker's network of smoking friends and acquaintances. A factor that enhances selection (an accuracy motive for the selector) may have a low probability of retransmission (avoiding interpersonal reactivity in a recipient) making reach through retransmission – with its enhanced likelihood of social influence implicit in the sender's testimony through the act of forwarding – minimal. Obvious cases of selection without retransmission keep exposure limited to the original selector minimizing the impact of both exposing others to the information and of social influence through the implicit endorsement process (Cialdini & Goldstein, 2004; Cialdini, Kallgren & Reno, 1991; Messing & Westwood, 2012). Also, factors enhancing both selection and transmission increase the reach of primary information to secondary recipients who then become eligible sources for retransmission themselves.

The Theoretical Bases for Selection and Transmission

In the literature that we review below, two sets of factors are examined as the causal bases for selection and transmission. The first set is derived from research on the *psychological motives* that drive information selection and transmission. The second set is derived from research on the *message factors* that drive selection and retransmission and is mostly dependent on the communication and marketing literatures. Although one might be inclined to treat these literatures as distinct, we hope to convince the reader that they inform each other.

We argue that the psychological motivations for selection and transmission are similar to those explaining observed effects for message characteristics. Psychological motives can derive from a variety of sources (i.e., individual, social, and contextual). These sources may be difficult to manipulate in general but, as the literatures reviewed below will show, contextual sources such as the characteristics of messages can invite and activate specific motivations of information consumers. Successfully predicting selection and transmission requires intervention and any intervention will in turn require message manipulations that work with rather than in opposition to the a priori motives of audiences. The basis, then, for new research and for theory development flows from the interplay of these two superficially disparate literatures.

Psychological Motives

The classic assumption in attitude research is that people are motivated to defend their attitudes from challenges (e.g., Festinger, 1957; Hart et al., 2009; Olson & Stone, 2005), which should lead them to both seek out and disseminate attitude consistent information. In attitude theory (e.g., Albarracín, Johnson, & Zanna, 2005; Eagly & Chaiken, 1993; Zanna & Rempel, 1988), *attitude* represents an evaluation of an entity (an issue, person, event, object, or behavior; e.g., President Obama). Selective exposure and selective transmission enable people to defend their attitudes, beliefs, or behaviors by restricting challenging information and ensuring availability of consistent information. Selectivity of this type is known as a *congeniality* bias, traditionally referring to exposure but here used to encompass information dissemination as well.

Festinger was probably the first to formalize the notion of attitudinal selectivity (1957, 1964), although the notion had been previously introduced by William James (1950) and even Francis Bacon (1960). Festinger's theory states that people avoid information inconsistent with their attitudes and decisions to prevent the unpleasant state of arousal known as *cognitive dissonance*. The potential for learning that one is mistaken can cause dissonance and trigger a search for consistent information to reestablish the more pleasant state of cognitive consonance. In this paper, we also propose that cognitive dissonance can trigger dissemination of consistent information to avoid the possibility of threatening information available in a social network and the associated dissonance.

The *congeniality principle* has often been examined with a laboratory paradigm in which participants select information from alternatives. Prior to this selection, participants make a decision (e.g., about the guilt of a defendant in a mock trial), form an attitude (e.g., toward

works of art), report an existing attitude (e.g., on abortion), or report a prior behavior (e.g., whether they have smoked in the past). Afterwards participants can select information about the same issue (e.g., abortion, smoking) from a list of options usually presented as titles or abstracts of available articles. Typically half of these options support the participant's attitude, and the other half contradict it. Selection of more articles that agree and fewer that disagree indicates a *congeniality bias*, whereas selection of more articles that disagree and fewer that agree indicates an *uncongeniality bias*. The role of a priori attitudes in selection drives congeniality biases.

In one of the first studies ever investigating selective exposure (Adams, 1961), mothers reported their belief that child development was predominantly influenced by genetic or environmental factors and then could choose to hear a speech supporting either point of view. Consistent with the congeniality bias, mothers overwhelmingly chose the speech that favored their view on the issue. Despite periodic challenges to the existence of attitudinal selectivity (e.g., Freedman & Sears, 1965), findings from research synthesis indicate a bias favoring congenial information, even though there are important moderators of the phenomenon. Hart et al.'s (2009) meta-analysis synthesized 67 eligible reports of selective exposure, which contained 91 studies incorporating 300 statistically independent groups with just under 8,000 participants The average effect indicating a congeniality bias was estimated at $d. = 0.36$ (95% CI = 0.34, 0.39) according to fixed-effects analysis and $d. = 0.38$ (95% CI = 0.32, 0.44) according to the random-effects analysis, both indicating a moderate congeniality bias.

A model of selective exposure determinants was proposed by Hart and colleagues (2009) and can be expanded to incorporate attitudinal selectivity in dissemination of information. In this model, information choices are meant to fulfill goals to defend attitudes, beliefs, and behaviors and to accurately appraise and represent reality (Chaiken, Liberman, & Eagly, 1989). Defense and accuracy motives have been popular in analyses of how people process attitude-relevant information (Chaiken, Wood, & Eagly, 1996; Eagly, Chen, Chaiken, Shaw-Barnes, 1999; Johnson & Eagly, 1989; Prislin & Wood, 2005; Wyer & Albarracín, 2005). *Defense motivation* can be defined as the desire to defend one's existing attitudes, beliefs, and behaviors; *accuracy motivation* is the desire to form accurate appraisals of stimuli (Hart et al., 2009). Although previous theorists also proposed a third motive (e.g., see Lundgren & Prislin, 1998), *impression or relationship-management motivation*, the desire to form and maintain positive interpersonal relations, Hart et al.'s (2009) meta-analysis did not include this motive because it was not well represented in their synthesized research. This motive, however, is included here due to its role in the inherently social character of information transmission.

Defense Motivation

According to dissonance theory, selective exposure to congenial information is a strategy to avoid or assuage cognitive dissonance, or discomfort arising from the heightened presence of dissonant cognitions (Festinger, 1954). The mere presence of cognitive conflict (Beauvois & Joule, 1996; Harmon-Jones, 2000; Harmon-Jones, Brehm, Greenberg, Simon, & Nelson, 1996) or a self-threat, such as the perception that one is ignorant (Aronson, 1968; Greenwald

& Ronis, 1978; Schlenker, 1980, 2003; Steele, 1988) can cause this discomfort to arise. Presumably, anticipating or experiencing cognitive dissonance motivates people to defend themselves by seeking congenial information.

Defense motivation should be stronger when people who just engaged in a behavior or reported an attitude or belief receive challenging (vs. supporting) information before selecting information (Frey, 1986). If people encounter a challenge to recently expressed attitudes, beliefs, or behaviors, their effort to diminish the cognitive conflict may increase the selection rate of congenial information (Beauvois & Joule, 1996; Festinger, 1964). In one study, participants decided whether or not to extend the contract of a hypothetical store manager. Afterwards, participants were asked to read congenial information, uncongenial information, both congenial and uncongenial information, or no information *prior* to selecting additional reading material (Frey, 1981). Results demonstrated that participants selected congenial information more often when they were asked to read uncongenial rather than congenial information before making their selection. Also, whereas high-quality uncongenial information has the potential to challenge individuals' beliefs and attitudes, low-quality uncongenial information does not. Hence, to the degree that defense motivation guides exposure decisions, having the option of choosing apparently high-quality uncongenial information has been hypothesized to enhance the congeniality bias. Correspondingly, whereas high-quality congenial information can potentially buttress pre-existing attitudes, low-quality congenial information, despite its congenial status, may threaten prior attitudes. Hence, anticipations of high-quality congenial information may enhance selection of congenial information as a way of defending a prior belief or attitude (Festinger, 1964).

Defense motivation is presumably also strengthened by individuals' commitment to the relevant attitude, belief, or past behavior and by increasing relevance of the issue to their enduring worldviews. Personal commitment to an attitude, belief, or behavior is presumed to increase defense motivation due to the greater discomfort that holding an incorrect view on an important issue produces (Brehm & Cohen, 1962; Kiesler, 1971). Researchers have operationalized commitment by directly assessing participants' loyalty (e.g., Jonas, & Frey, 2003) or by asking them to (a) engage in a behavior under high or low choice conditions (e.g., Frey & Wicklund, 1978), (b) dedicate more or less time or effort to attitude-relevant behavior (e.g., Betsch, Haberstroh, Glöckner, Haar, & Fiedler, 2001), (c) publicly affirm or withhold their opinions (e.g., Sears & Freedman, 1965) or anticipate such affirmation or withdrawal (e.g., Jonas, Schulz-Hardt, & Frey, 2005), or (d) believe that they were or were not able to change their attitudes, beliefs, or behaviors at some later point in the study (e.g., Frey & Rosch, 1984). Similarly, if attitudes, beliefs, or behaviors are linked to individuals' enduring values (e.g., on the controversial issues such as euthanasia or abortion), uncongenial information should produce greater unease and cognitive conflict, thereby increasing the congeniality bias (e.g., Festinger, 1964).

Additionally, individual personality differences may affect the extent to which people are motivated to defend their views and behaviors. Closed-minded individuals may view challenging information as a threat, whereas open-minded people may view it with curiosity (Adorno, Frenkel-Brunswik, Levinson, & Sanford, 1950; Altemeyer, 1981, 1998).

Consequently, individuals with high (vs. low) scores on personality variables assessing closed-mindedness (such as dogmatism and authoritarianism) should evince a stronger congeniality bias. Furthermore, people who view themselves as incapable of resisting or counter-arguing challenging information may be more motivated to proactively guard against such threats (e.g., Albarracín & Mitchell, 2004). If so, the congeniality bias should be stronger for individuals with lesser confidence in their attitude, belief, or behavior. Researchers have operationalized confidence by providing bogus positive (vs. negative) feedback about participants' ability to form accurate attitudes, beliefs, or decisions (e.g., Micucci, 1972; Thayer, 1969) or by assessing participants' (a) confidence in their attitude, belief, or behavior (e.g., Berkowitz, 1965; Brechan, 2002; Brodbeck, 1956), (b) anxiety (Frey, Stahlberg, & Fries, 1986), or (c) consistency (vs. inconsistency) among behaviors and beliefs (Feather, 1962).

Hart et al.'s (2009) meta-analysis thoroughly examined defense motivation as a source of the congeniality bias. In this synthesis, the congeniality bias was weaker when there was support as opposed to either no challenge or support of the attitude prior to information selection; the latter two conditions did not differ from each other. Also, the congeniality bias was larger when the uncongenial or congenial information available for selection was high or moderate in quality than when it was low, and for samples with high than moderate commitment to an attitude, belief, or earlier behavior. Last, the congeniality bias was larger when the value relevance of the issue was high than low, samples were high in closed-mindedness (vs. moderate), and participants were low or moderate (vs. high) in confidence in the attitude, belief, or behavior.

Accuracy Motivation

Accuracy motivation should increase attention to and elaboration of attitude-relevant information (Chaiken et al., 1989; Kunda, 1990). For example, people who are held accountable for their judgments about a target individual consider and integrate more of the individual's idiosyncratic particularities and hence can predict more accurately the individual's future behavior (Tetlock & Kim, 1987). Also, when accuracy motivation is higher, individuals are less likely to form an impression of another person in the absence of sufficient evidence (Kassin & Hochreich, 1977). Thus, they should prefer valid information regardless of its consistency with their own views (e.g., Chaiken, Giner-Sorolla, et al., 1996). Generally, any issue that could have foreseeable effects on future personal outcomes (i.e., high outcome relevance) is likely to increase accuracy motivation (Albarracín, 2002; Eagly et al., 1999; Johnson & Eagly, 1989; Kruglanski & Freund, 1983; Petty & Cacioppo, 1986; Tetlock & Kim, 1987; but see Darke & Chaiken, 2005) and thus engender unbiased exposure to both congenial and uncongenial information.

Any increase in the utility of uncongenial information may also diminish the congeniality bias by enhancing accuracy motivation. Researchers have manipulated utility by assigning participants either to debate an issue or to write an essay in support of their attitudes, beliefs, or behaviors (e.g., Canon, 1964; Freedman, 1965). Expecting to participate in a debate enhances participants' selection of uncongenial information that may be more useful in this context (Canon, 1964). Correspondingly, the expectation of supporting one's view in an

essay enhances the selection of congenial information that may facilitate constructing stronger supporting arguments (Canon, 1964). In addition, individuals may select novel information, regardless of its position, because new information is typically of greater utility than familiar information (Frey & Rosch, 1984). Finally, any increase in information quality can potentially increase the probability that it will be selected. Contrary to defense motivation, accuracy motivation should direct individuals to the highest quality information despite its potentially negative consequences for cognitive conflict. Hence, congeniality biases in selective exposure may be attenuated when the uncongenial information is high in quality but accentuated when the congenial information is high in quality. Similarly, Knobloch-Westerwick and her colleagues have suggested that people seek out media messages with high informational utility. Specifically, they posit that media content has utility when it conveys information regarding threats or opportunities for individuals, and the level of utility increases with the perceived *magnitude*, *likelihood*, and *immediacy* of the threats and opportunities, and the perceived *efficacy* to cope with the threats and opportunities (Hastall, 2009; Knobloch-Westerwick, 2008; Knobloch-Westerwick, Carpentier, & Blumhoff, 2005; Knobloch, Carpentier, & Zillmann, 2003).

Hart et al.'s meta-analysis also found support for the role of accuracy motivation in attitudinal selectivity. First, the congeniality bias was larger when the congenial information was highly useful than when there was no experimental goal, and an *un*congeniality bias appeared when the congenial information was not useful. Second, the congeniality bias was weaker when the uncongenial information was high than low in utility or when there was no goal. Contrary to the moderating role of accuracy motivation, the congeniality bias was larger when the uncongenial information was high or moderate in quality rather than low in quality. This finding suggests that high quality uncongenial information is threatening because defense motivation dominates decisions.

Impression and Relationship-Management Motives

Various past perspectives have emphasized that attitudes are used to manage social relationships (Johnson & Eagly, 1989; Prislin & Wood, 2005; Schlenker, 1980; Tetlock & Manstead, 1985). Selecting information in public settings can facilitate or hinder social goals (D. Katz, 1960; Tetlock & Manstead, 1985). For example, the desire to communicate an attitude to a social group may lead to publicly selecting congenial information (e.g., D. Katz, 1960). In contrast, the desire to appear as motivated by accuracy or openness may lead to the public section of uncongenial information. To the best of our knowledge, there is little research on these issues up to this point (cf. see Knobloch-Westerwick & Hastall, 2010 for the role of self-enhancement motive in selective exposure).

The defense, accuracy, and relationship maintenance motives are also important in information transmission. An investigation of exposure decisions made for others (Earl, Hart, & Albarracín, 2013) was based on the notion that selective exposure *for others* may follow the same mechanisms as selective exposure for the self. To the extent that selective exposure for others operates under similar principles, individuals may choose information guided by their own defense and accuracy motivations. For example, merely choosing congenial information to be presented to others may reduce the selector's cognitive

dissonance and generate pleasant affective states. Likewise, people making the choice may feel they are disseminating accurate information, thus satisfying their own need for accuracy. More so than with decisions for the self, selective transmission is likely to be in the service of relationship maintenance, generating tendencies to meet the goals of the target person in making the selection.

Suppose people disseminate information that is expected to meet the defense motivation of the receivers of the information. This bias may be larger for liked than disliked others, as people are more likely to intuit the motives of a person they like rather than a neutral or disliked other (Heider, 1958). Examples of the probability of experiencing the motives and emotions of liked others include vicarious experiences of pain for liked others (Krebs, 1975), vicarious embarrassment for in-group members (Miller, 1987), and vicarious dissonance also for in-group members (Norton, Monin, Cooper, & Hogg, 2003). Consistent with this possibility, Earl and her colleagues (2013) found that people are aware that others prefer to receive congenial to uncongenial information. Furthermore, in making dissemination decisions, selectors honor the assumed preferences of liked others or the preferences of others when given explicit instructions to select information the others will likely enjoy. Interestingly this selective dissemination occurs even when no interaction with the target is expected, suggesting that the same biases may occur for anonymous audiences such as dissemination of information on the internet.

The research by Earl and colleagues (2013) suggests that the motivation to maintain or enhance social relationships underlies information transmission, producing information for others expected to be congenial to them. However, the defense motivation for the selector and the recipient can suggest very different decisions. For example, if the recipient's attitude is opposite to the selector's attitude, the selector may choose information that meets the defense motivation of the selector or the recipient. Future research needs to establish which of these motivational forces carries the day. Perhaps the recipient's motivation drives decisions when the relationship maintenance motivation is higher than the selector's defense motivation, but this possibility needs to be tested in empirical studies of the problem.

Selecting information for others is not exactly the same as transmitting information to others. A comprehensive survey of "word of mouth" (WOM) and "word of mouse" (eWOM) research by Berger (2014) focused on transmission and led to broadly similar conclusions for the motivations that drive transmission as Earl et al. (2013). Specifically, four drivers were identified, including (a) self-enhancement; (b) emotion; (c) utility; and (d) accessibility. Self-enhancement involves defense and relationship maintenance motives mentioned earlier (Hennig-Thurau, Gwinner, Walsh, & Gremler, 2004; Sundaram, Mitra, & Webster, 1998). Emotion refers to the reward of sharing information (even negative information, Rimé, Philippot, Boca, & Mesquita, 1992). Brain research by Tamir and Mitchell (2012) indicates that information sharing activates the same regions activated by food, money, and physically attractive others. Utility and accessibility also factor in, as people want to help others by providing useful information and accessible, top-of-the-head information predominates in WOM or eWOM exchanges (Hennig-Thurau et al., 2004; Sundaram et al., 1998). Information that has strong attention-getting properties (i.e., stories,

unusual content) and that remains "sticky" in memory is thus more likely to be available for retransmission (C. Heath & Heath, 2007; Norenzayan & Atran, 2004).

In Sum

Although there is no clear consensus on the motivations that are the primary ones for transmission, there is clear overlap in what different theorists are hypothesizing including specifically impression formation and relationship management. These motivations have been less well studied in the arena of selection than accuracy and defense motives but have been a part of the conceptual foundations of selection motives from the earliest days. In the emerging media environment, where communicating to one's connections – that is, transmission – has been radically simplified, the impression and relationship functions must become a more significant component of the research agenda while the defense and accuracy motives need to be explored as part of the driving motives for transmission.

Message or Information Factors

The previous section argues that selection and transmission processes are driven by the same three broad motivations: for accuracy, for defense, and for impression and relationship management. In this section, we summarize research findings on informational features pertinent to selection and transmission, especially within the emerging media environment. We also speculate about the motivational functions that could explain why a particular message feature enhances or retards selection or transmission. These speculations will remain so until researchers examine not just the processes of selection and transmission of informational items but also the (sometimes complex) motives driving these processes (e.g., Barasch & Berger, 2014). Although the study of psychological motivations for selection and transmission includes some message characteristics indirectly (e.g. the information's utility or its argumentative strength), message characteristics and the psychological motivations they can influence deserve treatment in their own right, precisely because they can be manipulated and in turn potentially affect accuracy, defense, and interpersonal motives for selection and for transmission.

Efficacy Information

Perceived efficacy has had a long and vibrant role in predicting behavioral actions (Bandura, 2004, 2009; Fishbein & Ajzen, 2010). Efficacy information, specifically response efficacy, provides content that is utilitarian and relevant.[1] Informational utility plays a significant role in message selection (Hart et al., 2009) as the previous sections have described. Information that has utility for behavioral action is potentially consequential in predicting intention and behavioral outcomes (Witte & Allen, 2000). Past research indicates that information seen as high in utility is more likely to be selected (Hastall, 2009; Knobloch-Westerwick, 2008; Knobloch-Westerwick & Kleinman, 2012), even if the information is uncongenial (Hart et al., 2009). In one experiment, Knobloch-Westerwick and colleagues manipulated news maganizes in terms of four subdimensions of informational utility described earlier (i.e.,

[1]In our treatment, efficacy information will be used synonymously with useful and utilitarian information even though it is well known that response efficacy is behavior specific rather than serving a more general function like "usefulness" does.

magnitude, likelihood, immediacy, and efficacy) and found selection to be greater in the high-utility condition (Knobloch-Westerwick, Hastall, Grimmer, & Brück, 2005, as cited in Hastall, 2009; Knobloch-Westerwick, 2008).

Two important studies indicate that efficacy information is crucial for retransmission of a message. Thorson (2008) examined news articles offering advice about issues, such as medical problems, real estate, finance, personal relationships, and jobs. They tended to remain on the NYT's 'most e-mailed' list longer than articles with no such information. Berger and Milkman (2012) also found that news articles that contain useful information are more likely to appear on the list. In both studies, articles' appearance on the 'most emailed' list is a behavioral indication of email-based retransmission being tracked by the New York Times. Importantly, other studies have found similar results on transmission, although not with such clearly behavioral outcomes (e.g., C. S. Lee, Ma, & Goh, 2011). As some accounts have highlighted retransmitters' desire to help or encourage recipients by sharing useful information (Berger, 2013; Ho & Dempsey, 2010; Huang, Lin, & Lin, 2009; C. S. Lee & Ma, 2012; C. S. Lee et al., 2011; Phelps, Lewis, Mobilio, Perry, & Raman, 2004), the role of utilitarian information in transmission should not be surprising.

Utilitarian, efficacious information tends to be both selected and transmitted. This type of information is a prime candidate for enhancing informational reach given that it functions as a positive predictor in both processes. The motives for efficacy information's function could include accuracy during selection and impression and relationship management in transmission through altruism, helping, and self-enhancement.

Novel Information

Novel information comprises material that is new, or old but presented in a new way. Novel information can be unusual, unexpected, and deviant, thus providing news value (Shoemaker, Chang, & Brendlinger, 1987; Shoemaker & Cohen, 2006; Shoemaker, 1996). Novel content deviates from expectations and attracts an audience's attention by inviting them to "stop and think," see a potential threat or interrupt routine information processing (Shoemaker, 1996; Stephens, 2007). An experimental study found that Individuals are more likely to select news articles containing deviant content (J. H. Lee, 2008).

Novel content is also more likely to be transmitted. Researchers have suggested that an unusual/surprising event or issue triggers interpersonal conversations because talking with others helps people make sense of it (Berger, 2013; C. Heath & Heath, 2007; Rosen, 2009). Studies of New York Times news articles have reported that surprising or counter-intuitive articles are more frequently shared (Berger & Milkman, 2012; Thorson, 2008). Moreover, folktales or jokes are more widely spread when they use repetition and deviation that breaks the pattern to create surprise (Loewenstein & Heath, 2009), and individual retransmission of information correlated with evaluation of the information as novel (Kim, Lee, Cappella, Vera, & Emery, 2013).

In summary, novel information has a tendency to be both selected and transmitted. The motives for selection could include accuracy as novel information may provide unique, informative content for decision-making. Novel information can also be selected to enhance

one's self-image during retransmission to others or to serve an accuracy or altruistic motive in providing innovative material to others who might employ it.

Emotion: Arousal, Positivity, and Negativity

Emotional arousal has been identified as a determinant of social transmission of information, independent of the valence of the emotion (Berger & Milkman, 2012; Dang-Xuan, Stieglitz, Wladarsch, & Neuberger, 2013). Emotional arousal triggers social sharing of the emotion, thereby making emotionally arousing messages widely circulated through social networks (Christophe & Rimé, 1997; Harber & Cohen, 2005; Rimé, 2009). Empirical evidence on how emotional arousal increases social retransmission is robust (e.g., Berger, 2011; Berger & Milkman, 2012; C. Heath, 1996; C. Heath, Bell, & Sternberg, 2001; Peters, Kashima, & Clark, 2009), although too much emotionality may be a turn off (Kim et al., 2013).

Although people seek both positive and negative emotional information, research has suggested that individuals are hardwired for negative information (Baumeister, Bratslavsky, Finkenauer, & Vohs, 2001; Harcup & O'Neill, 2001; Rozin & Royzman, 2001). Negatively-valenced information, such as news stories with a "conflict" frame, is more likely to be selectively viewed than positive or neutral ones (Knobloch, Hastall, Zillmann, & Callison, 2003; Meffert, Chung, Joiner, Waks, & Garst, 2006; Zillmann, Chen, Knobloch, & Callison, 2004).

As noted earlier, some researchers have suggested that interpersonal considerations – including others' topical interests, altruistic or socializing motivations, status-seeking or self-enhancement motivations, and tie strength – are consequential to the transmission decision (Berger, 2014; Ho & Dempsey, 2010; Huang et al., 2009; C. S. Lee & Ma, 2012; C. S. Lee et al., 2011; Phelps et al., 2004). Positively valenced information should be more widely shared, because it can enhance positive images of senders (Alhabash, et al., 2013; Kim et al, 2013). The role of positive emotions in the form of humor (Campo, et al., 2013; Shifman, 2012) and pride and empathy (van den Hooff, Schouten, & Simonovski, 2012) predict transmission measured through intentions as well as behaviors. Along the same lines, Berger and Milkman (2012) found that positive news articles invited more frequent email-based retransmissions than those with negative emotional valence. An experimental study by Eckler and Bolls (2011) also demonstrated that video ads with positive emotional tone are more likely to be retransmitted than those with negative tone (see also Carter, Donovan, & Jalleh, 2011). However, in a study in the political context of a German election, Dang-Xuan et al, (2013) found that "tweets" of emotional evocative information, whether positively or negatively toned, tended to be retweeted with greater frequency than less emotionally intense information (see also Berger & Milkman, 2012; C. Heath, 1996). Berger (2014) also acknowledges that there can be a sense of self-enhancement in communicating negative information when that information can be construed as showing discrimination, disdain, or heightened cynical sophistication – each elements of impression management.

The role of emotion in selection and retransmission is complicated by the emotional valence, the role of intensity as indexed by arousal, and the role of topical relevance. Some researchers have emphasized the intrapersonal and interpersonal benefits of sharing emotional materials enhancing the collective sense-making of the experience and

establishing and strengthening social bonds (Harber & Cohen, 2005; Peters & Kashima, 2007; Rimé, 2009). The role of avoidance and accuracy motives in selection are less clear when strong emotions are also activated. For example, when emotional information on a personally involving topic (e.g. breast cancer for a person who has a significant family history) is available, accuracy and avoidance motivations can come into play as selectors seek to understand and perhaps avoid their own worries, fears, and options. Complex interactions may be likely when, for example, emotionally evocative personal threats are compared to emotionally evocative threats without personal ramifications.

Persuasiveness of Information

One topic that has received very little attention in the research so far is the potential persuasive strength of an informational item on the selector or on the recipient of a transmission. Information that is argumentatively strong has a greater probability of being influential (Johnson et al., 2005; Park, Levine, Kingsley Westerman, Orfgen, & Foregger, 2007). Studies of selection and transmission will need to intensify their consideration of indicators of perceived persuasive influence (Bigsby, Cappella, & Seitz, 2013), so that our studies of selection and transmission in emerging media are also studies of potential influence as well.

In Hart et al.'s (2009) meta-analysis, the congeniality bias was stronger when the information available for selection was deemed moderate to high in quality than low in quality. Studies on Youtube videos have found either no significant association or significantly negative associations between the persuasiveness and popularity of the videos (Chatzopoulou, Cheng, & Faloutsos, 2010; Tucker, 2014). In a health context, Kim et al. (2013) found that smokers tended to select argumentatively strong anti-smoking informational items to view further, perhaps indicating an accuracy motivation when self-interest was important. In the Kim et al. study, smokers might have been more strongly motivated by accuracy than by defense. A related line of research has shown that messages with a high-credibility source – a potential indicator of the persuasiveness of the messages – are more likely to foster selective exposure in health contexts (Knobloch-Westerwick, Johnson, & Westerwick, 2013, p. 822), and such effects also operate in political contexts but only for individuals who attach low importance to message topics (Westerwick, Kleinman, & Knobloch-Westerwick, 2013).

The relative strength of persuasiveness-related motivations should be investigated to determine which situations alter the weights of each motive. In one marketing study, information that clearly signaled an intent to persuade exerted a negative influence on intentions to forward the message (J.-K. Hsieh, Hsieh, & Tang, 2012), but there was no effect of argument strength on intention to transmit anti-smoking information to others (Kim et al., 2013). The congeniality bias that operates in selection may operate in transmission as well when transmitters make clear choices about avoiding conflict with members of their networks (see Earl et al., 2013). To the best of our knowledge, the number of studies dealing with the potential persuasiveness of information is simply too small to allow reliable conclusions at this time. Research has yet to examine transmission contexts at a level that

permits testing hypotheses about the relative balance of accuracy and defense motivations on the part of the retransmitter and the secondary recipient.

Summary and Directions for the Future

The characteristics of the emerging public information environment invite research into the processes by which audiences select information for their consumption and later transmit it to others in the audience. These processes are likely affected by defense, avoidance, and impression and relationship management motives, as well as characteristics of the information at hand. The defense motive drives a strong tendency toward the selection of information that is congenial to an audience's attitudes except that specific conditions, such as high information utility activate accuracy motives that yield a bias in favor of uncongenial information. When selecting information for others rather than self, some evidence also suggests that the same motives drive selection of information for others use. Information transmission, sometimes called *word of mouth* even though it occurs in mediated channels, may stem from factors related to self-enhancement, emotion, utility, and what is readily accessible (Berger, 2014; Earl et al., 2013).

Message characteristics can activate psychological motivations to select and transmit information. Although the research evidence about these characteristics is relatively sparse, it is growing rapidly in highly suggestive ways. Efficacy information (aka useful information), novel information, and strong information have been linked to increased selection and transmission. Emotionally evocative information is also likely to be selected regardless of its valence, although overall research trends suggest that positive emotional information has an advantage for retransmission. Much is yet to be done on message characteristics that enhance and retard selection and transmission and particularly the underlying motivations activated by specific contexts and message features.

The research into the characteristics of information affecting selection and transmission is clearly at an early stage. Characteristic of the research so far is an emphasis on main effects only. We learn that efficacious and novel information affects both selection and transmission positively, as do both emotionally positive and negative information affect selection and transmission positively. The role of stronger and weaker arguments in the selection and transmission of efficacious, novel, or emotional informational items is however unclear. We would be surprised if subsequent research taking into account multiple message factors and multiple, competing motives were to preserve the simple main effect findings obtained so far.

Two lines of research are implicated in future studies of reach: (1) interaction effects among informational features and motives established by context, individual differences, or some other non-message factor; (2) motives activated or suppressed by informational characteristics.

Interaction Effects

In the review of message characteristics affecting selection and transmission, the absence of defense motives suppressing selection or transmission is stark. Part of the reason for this is

that features like efficacy and novelty are not pitted against congenial and uncongenial informational options as of yet. The Hart et al. (2009) meta-analysis already tells us that utilitarian information can reduce the congeniality bias but how powerful is this effect and will it operate similarly in transmission studies? Similar questions can be asked about emotionally evocative informational items. The congeniality bias is strong and general, but can emotionally evocative materials reverse or just reduce the congeniality bias? Relationship management motives are also plausible drivers of information transmission. Is the projection of congeniality of information for receivers a motivator to avoid communicating disagreeable information even if it is useful, novel, and emotionally positive? In short, although we expect interactions between message factors pushing in one direction (e.g. transmission) and motivational factors pushing in the opposite direction, their relative balance remains an empirically and theoretically open set of questions.

Motivations for Selection and Transmission

Some motivations, such as defense and accuracy, have been widely researched in the arena of selection. Extending the research to interpersonal motivations in selection and to the full range of motives – accuracy, defense, and interpersonal in the domain of transmission – seems to be a high priority for the next generation of studies. There is a more subtle issue however. Bringing some theoretical coherence and cumulative, coherent knowledge to the study of message characteristics in selection and transmission likely requires that researchers begin to identify the functions of various informational elements. This may mean that superficial similarities give way to deeper structures. For example, novel information can be whimsically unusual and odd (i.e. strange and unique) or can provide new evidence for some outcome (i.e. new scientific evidence). Both are novel in some sense but are likely to be susceptible to serve different motivational forces in selection and retransmission. Understanding the psychological basis of the information from the point of view of the users may allow superficially similar information to be categorized differently and superficially different information to be categorized similarly. Such conceptual innovations will help set the basis for coherent research agendas and the advancement of theory.

In sum, to advance our understanding of selection and transmission, a coherent framework within which to accumulate knowledge is necessary. Although this paper does not provide that framework in detail, it offers some elements of that framework that can both guide hypothesis generation and the elements of an explanatory model applicable to both selection and transmission. The emerging media environment has brought into prominence questions of selection and transmission, not only alone, but also together. The consequence is that the study of informational reach as a media effect is both warranted and necessary for theoretical and practical reasons. The opportunity for audiences to select from an almost unfathomable array of information options has never been greater. The opportunity to broadcast one’s own choices and comments to others close and far in social (and geographical) distance has never been what it is now. The new public information environment demands studies of selection and transmission and theories up to the task of systematic explanation and coherent accumulation, thus reinvigorating the need to examine the same issues that foundational thinkers in the field have raised before.

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