

UTILITARIAN AND HEDONIC MOTIVES OF RUMOR TRANSMISSION

By

Hyegyu Lee

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ABSTRACT

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This study looked into a dual motive of rumor transmission, driven by informational and sensational features of rumor statements. Prior research of rumor has focused on only the informational value of rumors. However, that utilitarian perspective does not explain why highly implausible but sensational rumors are shared.

Based on the utilitarianism and hedonism of the consumption motives of products, this study proposed that informational rumors are transmitted for utilitarian gratifications while sensational but implausible rumors are transmitted for hedonic gratifications. Rumor believability and emotional arousal were proposed as mediating variables for the utilitarian motive process and for the hedonic motive process, respectively.

Toward that end, an online experiment with college students was conducted in the Twitter context. A 2 (rumor informational value: high *vs.* low) x 2 (rumor sensational value: high *vs.* low) between-subjects design was employed. Rumor believability, emotional arousal, motives of rumor transmission, and the likelihood of rumor transmission, were measured after exposure to experimental stimuli.

Results of structural equation model analyses suggest that, as predicted, informational rumors and sensational rumors are likely to be transmitted through different routes. Rumor informational value had a significant indirect effect on the

utilitarian motives (i.e., fact-finding motive and information-providing motive) of rumor transmission through rumor believability. However, only the fact-finding motive was correlated with the likelihood of rumor transmission.

As predicted, rumor sensational value predicted emotional arousal. However, unlike the prediction of this dissertation, emotional arousal did not predict the hedonic motive of rumor transmission, and the hedonic motive did not predict the likelihood of rumor transmission. Instead, emotional arousal directly impacted the likelihood of rumor transmission.

By considering the role of emotional arousal and how psychological motives shape rumor transmission, this dissertation extended prior research on rumor in which the cognitive paradigm dominated. This dissertation provides deeper insight into rumor transmission, such as what becomes viral and why implausible rumors are shared. Theoretical and practical implications are further discussed.

This dissertation is dedicated to my husband, Hyounwoo Kim, who inspired me to take this journey, prayed for me to walk through this journey, and sacrificed himself for me to finish this journey.

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Chapter 1

INTRODUCTION

Vaccines are designed to guard against contracting diseases. However, in 1976, the exact opposite occurred when a vaccine killed more people than did the disease it was meant to prevent. The vaccine was to counter a strain of the H1N1 influenza virus, and the U.S. government intensely focused its energies on the vaccination program, concerned about a pandemic. Only 14 people contracted the actual virus, with one death, but the vaccine caused 25 deaths and hundreds of cases of Guillain-Barre syndrome, a nervous system disorder.

- from a story “Vaccines: 14 Scary Rumors” on the TruTV website

As caught on video, the drive-thru workers of a McDonald’s in Toledo, Ohio, were attacked by a female zombie who leaped from her car, clawed through the drive-thru window, and began tearing at anyone in sight. She was screaming about needing Chicken McNuggets although it was 6:30 a.m. and McDonald's does not serve McNuggets until lunchtime. Beating on the window and clutching at McDonald's employees, this zombie uttered a series of bizarre phrases including “I'm going to eat your ****ing face and I'm going to digest it and **** it out into the gutter!”...During her attack, she also emitted numerous screeches including cat-like hisses and animalist-attack noises.

- from a story reported by Adams (2013) on Natural News

Rumors can circulate like “the air we breathe” (Rosnow, 1988, p. 12). Traditionally, rumor scholars simply defined rumors as “unverified information,” arising and spreading when people are uncertain and anxious about a topic of personal relevance to them (Bordia & DiFonzo, 2005). The first rumor described above may be an example of this. Rumor research reports that people generate rumors to satisfy the need for information when formal channels provide too little for interpretation of ambiguous or uncertain situations such as war or natural disaster (Allport & Postman, 1947; DiFonzo & Bordia, 2007) or medical decision-making such as vaccination (DiFonzo, Robinson, Suls, & Rini, 2012). From this utilitarian perspective, Shibutani (1966) described rumor as improvised news.

However, rumors also circulate even in seemingly normal, everyday life when there seems to be nothing to stimulate one’s informational needs. Usually, rumors in this category are sensational or imaginative but implausible. They often use emotion-evoking words such as “bizarre” or imaginative subjects such as “zombie,” as shown in the second rumor above. These features of rumors may cause emotional arousal (Vettehen, Nuijten, & Beentjes, 2005) and provide hedonic benefits to rumor mongers. A similar view has been discussed in prior literature, although it has not been a main focus of rumor research; some scholars consider rumors to be fantasies created from an impulse for emotional gratification (Kimmel, 2003; Knapp, 1944).

To date, while rumor research is limited, the typical approach is to study rumor for its utilitarian aspects such as its informational function (Allport & Postman, 1947; Dubois, Rucker, & Tormala 2011). In general, rumor research fails to acknowledge the hedonic benefits rumors may offer, such as escapism, mental imagery, sensory pleasures,

fantasies, and emotional arousal. To fill this gap, the current study explores two distinct motives of rumor transmission: *utilitarian* and *hedonic*.

Concepts of rumor utilitarianism and hedonism are derived from motivation research in marketing and sociological disciplines. For example, Hirschman and Holbrook (1982) averred goods and services are consumed for two basic reasons: utilitarian gratification and hedonic gratification. The first dimension, utilitarian, is derived from functions a product provides, while the second, hedonic, results from sensations or emotional arousal experienced when using the product (Batra & Ahtola, 1990; Voss, Spangenberg, & Grohmann, 2003).

To explore utilitarian and hedonic motives of rumor transmission, the current study examines the relationship between the utilitarian/hedonic motives of rumor transmission and the likelihood of rumor transmission, using two types of rumors, *informational* vs. *sensational*, regarding product contamination. Based on the concept of utilitarian and hedonic consumption, this study expects that informational rumors are transmitted for utilitarian motives, while sensational rumors are transmitted for hedonic motives.

Negative rumors about consumer products are the focus of this study because they are prevalent and can severely impact businesses. Research is not extensive on the frequency and kinds of rumors in circulation. However, one survey of American and French marketing managers working in various sectors such as food/beverage, pharmaceuticals, and banking (Kimmel & Audrain-Pontevia, 2010) showed that a large proportion (74.5%) of rumors received by respondents were product rumors (e.g., “deaths caused by cell phones,” “baby food containing a risky beef ingredient”) (p. 246). Rumors

can have positive or negative valence qualities, but negative rumors appear more prevalent (Kimmel & Audrain-Pontevia, 2010) and often result in serious and adverse product consequences (Kamins, Folkes, & Perner, 1997).

From a medium perspective, Twitter is an emerging social media platform for rumor spread. Traditionally rumor has been defined as unverified information exchanged via interpersonal channels (Allport & Postman, 1947). However, this view is outdated. Microblogging services, like Twitter, have been emerging as a dominant channel for rumor spread (Oh, Agrawal, & Rao, 2013). Twitter, which allows its users to read, send and forward a messages of up to 140 characters each, accelerates rumor spread to large audiences. In fact, Twitter contains an abundance of rumors. For example, right after the Great East Japan Earthquake in 2011, Twitter was flooded with rumors about the disaster (Tanaka, Sakamoto, & Matsuka, 2013). In recognizing this phenomenon, this study employs rumor that appears in a form of tweet as a test stimulus.

By integrating utilitarian and hedonic motives of rumor transmission, this study aims to provide an integrated framework for rumor studies. The proposed model in this study better can explain why in everyday life people share not only plausible but also implausible rumors.

Practically, this study offers rich insights for practitioners to predict the strength of rumor influence, and to develop rumor rebuttal strategies. Where practitioners could identify motives of rumor transmissions, they would be able to develop more specific strategies to refute those rumors.

The remainder of this dissertation is organized as follows. Chapter 2 provides background on rumors. Chapter 3 reviews prior research on rumors, and other theoretical

and empirical studies guiding this study. Chapter 4 presents hypotheses and a proposed model. Research methods are reported in Chapter 5. Following this, Chapter 6 provides this study's findings. Finally, Chapter 7 provides general discussion of this study, limitations of this study and recommendations for future research. This dissertation concludes with theoretical and practical implications of the findings.

Chapter 2

BACKGROUND

Why Rumors

Rumors exist in all parts of society. Although unverified information, plausible or implausible rumors may influence our behaviors, and often resist correction. They can damage celebrities and non-celebrities, large and small and public or private organizations. Rumors sometimes change society by shaping public opinion.

Although some rumors might be harmless, endless lists of negative impacts are attributed to false rumors (Koenig, 1985). These range from loss of personal or institutional credibility, decrease of product sales, stock price plummets, travel- or trade-disruptions, to violent riots and beyond.

Rumors are known as one of the most influential factors for violence, prejudice, and discrimination (Knopf, 1975). For example, rumors caused and/or exacerbated racial violence in Los Angeles in the US (1992), and in Bradford riots in the UK (2001) (Fine, Campion-Vincent, & Heath, 2005).

Some rumors often reflect mistrust of government. One example is a rumor that the US government created human immunodeficiency virus (HIV) to exterminate homosexuals and African Americans (ANOVA Health Institute, n.d.). Rumors are prevalent in the political realm also. During his Presidential campaign in 2008, Barack Obama had to contend with the rumor he is Muslim and “pals around with terrorists” (Sunstein, 2009, p. 3).

From a business standpoint, rumors can be devastating to an organization.

Rumors are ubiquitous but perhaps the most pervasive might those about companies and their products. In a survey with American, Hispanic, and French consumers (Kimmel, 2008), nearly half of respondents (49%) answered that they heard marketplace rumors weekly or daily through word-of-mouth (face-to-face discussion, telephone or email), mass media and the Internet. Respondents recalled that a majority (57.2%) of rumors they heard were negative in nature.

Rumors on consumer products significantly can tarnish brand image, damage corporate credibility and consumer loyalties, impact sales and prompt the spread of negative word-of-mouth (Kimmel, 2008). For example, when McDonald's was rumored to use red worm meat in its hamburgers, its sales decreased by as much as 30% in areas where that rumor circulated (Tybout, Calder, & Sternthal, 1981). In March 1991, false rumors circulated that the Ku-Klux-Klan produced Tropical Fantasy Soda Pop to make black men sterile. Resultantly, sales plummeted by 70% and vendors dropped the product (Freedman, 1991).

Despite businesses' efforts to refute them, negative product rumors often persist over an extended period and negatively can and do impact consumer attitudes toward the product or purchasing behavior even when the rumors are implausible (Koenig, 1985). Two mechanisms, at least, account for why implausible rumors impact consumer attitudes and/or behaviors. First, when consumers repeatedly hear a rumor, they are likely to come to believe it. Mere repetition of information enhances the subjective familiarity and, thereby, the perceived truth value of that information (Skurnik, Yoon, Park, & Schwarz, 2005). Second, the imagery conjured by a rumor can cause changes in purchasing decisions regardless of belief or disbelief.

Product rumors also negatively can affect public health if medical products are involved. Numerous studies report that rumors instigated resistance to public health campaigns to use such products (e.g., Dodoo, Adjei, Couper, Hugman, & Edwards, 2007; Kaler, 2009; WHO, 2006). For example, when in the US a rumor grew that vaccination causes autism, many parents declined to vaccinate their children (Fenn, 2011). The curriculum for immunization training in nursing schools developed by the World Health Organization (WHO) Regional Office for Africa listed “rumors on infertility following vaccination” as a major obstacle impeding the region’s immunization intervention (WHO, 2006, p. 17).

Marketplace rumors have become more potential threats to business. The Internet and other emerging communication technologies have enabled swift and widespread dissemination of rumors (Kimmel, 2008). The Internet not only provides temporal or geographical freedom, but also enables rumor messages to exist permanently searchable via web-searching services. Besides, as a rumor can be transmitted anonymously in computer-mediated communication (CMC), people might concern themselves less about the veracity of the rumor, thus transmit it more easily in CMC than in person-to-person communication. For example, McDonald’s was the victim of a Twitter rumor that the company imposes an additional fee of \$1.50 per transaction on African-American customers. This rumor initiated in 2010 when someone posted a picture that shows the message taped to a store window of what looks like a McDonald’s. The second and third version of the rumor was widely spread via Twitter in 2011 and 2013, and the company had to dispel the rumor via its own Twitter (MSN News, 2013). Recognizing the potential power of rumors, and that it increases space of the Internet’s technological pervasiveness,

this study attempts to identify and understand why people transmit rumors even when they seem and sound implausible. Although this study is conducted in the context of product rumors, the model of rumor transmission proposed in this study need not to be restricted to this domain of research. Future studies are needed to test the model's validity and utility in other contexts.

Definition of Rumor

Rumor definition has evolved as our understanding of rumor has advanced during several decades of research. The classic and most influential definition is that rumor is “a specific (or topical) proposition for belief, passed along from person to person, usually by word of mouth, without secure standards of evidence being present” (Allport & Postman, 1947, p. 9).

The phrase “specific (or topical) proposition for belief” serves to differentiate rumors from myths in which topics are rather general and refer to the past. This also sets rumor apart from humor which is not presented as a proposition for belief (Kishler, Yarnold, Daly, McCabe, & Orlansky, 1952).

Prior to the advent of CMC, the key feature of rumors was that they spread from person to person by word of mouth. This highlighted that rumors are interpersonal, rather than mass communicative in nature (Kishler et al., 1952). However, that characteristic mode of rumor transmission is outdated. Via CMC, major channels of rumor transmission have changed and expanded dramatically. For example, immediately after the 2011 Great East Japan Earthquake, Twitter was flooded with false rumors, which continued to spread even after the Japanese government rejected them (Tanaka et al., 2013). Via social networking sites such as Twitter, rumor transmission is more similar to mass

communication where information is transmitted rapidly and to a large audience.

More important, the central feature of rumors lies in the phrase “without secure standards of evidence being present” which consistently has been included in definitions by other scholars. For example, DiFonzo and Bordia (2007) defined rumors as “unverified and instrumentally relevant information statements in circulation that arise in contexts of ambiguity, danger, or potential threat and that function to help people make sense and manage risk” (p. 13).

Rumors, as unverified information, might be completely- or partly- true or untrue. This feature differentiates rumors from other types of information, such as news or facts. Although rumors and news are similar in that they are both recent information and important to recipients, they differ in that rumors are unconfirmed informal information while news is confirmed formal information (DiFonzo & Bordia, 1997).

Unfortunately, this important distinction between news and rumors has been blurred in today’s media environment. The 24-hour news cycle pushes information to media channels faster than ever, often without opportunity for checking veracity. And user-generated content in social media is often circulated as news even when not yet confirmed (Kimmel, 2004). One good example is CNN’s iReport service in which anybody anywhere can report and read stories ranging from politics and business to food. In CNN’s iReport, stories are not screened, fact-checked or edited.

Beyond today’s unique information environment, at least two more problems exist in defining rumor as unverified information. First, although rumors are unconfirmed information and news is confirmed information, not every news item is communicated with evidence and not every rumor is communicated without evidence. In other words,

when communicated, some rumors contain seemingly “secure standards of evidence.” In a study that content-analyzed Internet rumors, Bordia and DiFonzo (2004) found that some rumors cited a specific source of information such as news media or authority, adding credence to what the speaker was saying. The description for *authentication* might be specific and concrete (e.g., “The FDA [Federal Drug Administration] reported that...”) or vague and general (e.g., “The article warns that...,” or “Video shows that...”).

Pertinently, an experimental study suggests that, over time, rumor can become fact (Dubois et al., 2011). When a rumor in which brand information was initially communicated with a qualifier of uncertainty (e.g., “I have some doubt”) was orally transmitted person to person, the uncertainty qualifier was lost while being transmitted from the first person to the fourth person. Consequentially, a rumor, despite the possibility that it is not fact, can be treated as increasingly factual over time.

The second problem of the definition of rumor as information without “secure standards of evidence” is the subjectivity of what is counted as evidence, because it varies via the lens through which it is viewed (Allport & Postman, 1947, p. 9). The same information can be categorized as rumor by one but otherwise by another, depending on its recipient’s previously held frames of information or schemas, information source, or the context or situation of the communication. In such instances, definition itself is variable within and between cases (Dalziel, 2013).

Accordingly, this study first sharpens the concept of rumor that will guide the research methods of this study. This study defines rumor as “a piece of unverified information regarding an event, organization or person who has potential to influence a group or society at large, of which primary source is not fully disclosed.” The most

central feature of rumor is that it is unverified information, that is, information without “secure standards of evidence” (Allport & Postman, 1947, p. 9). Secure or stable evidence comprises testimony from a person who directly experienced an event, or official announcement by an authorized person or organization. Rumors, however, are statements received from other people, rather than something they directly observed or experienced.

Unverified information may appear as a report from an authorized institute or organization such as the Food and Drug Administration (FDA). In this study, this type of information is not categorized as rumor considering that authenticity can be interpreted as evidence of the information (Fields, 2007). In comparison, if a primary information source is vague or general (e.g., “medical reports,” “an expert”), it is considered a rumor because the source information is incomplete.

Rumor and gossip are similar in that they both are unverified information. However, in two ways rumor can be distinguished from gossip. First, unlike gossip dealing with private lives, objects of rumor can be individuals, organizations or events. Second, although rumor and gossip both can be about individuals, they differ in that rumor deals with information that can influence a group or society at large while gossip itself has little influence. For example, “Barack *Obama* is a Muslim” can be considered rumor in that such information may affect public agendae *and* policy agendae. In comparison, “President Barack *Obama* and Michelle *Obama* are experiencing marriage problems” can be considered gossip in that such information is about private lives of individuals, and this might have no relevance to the society.

Given that concept of rumor, this study first reviews prior rumor literature. A

majority of rumor studies have focused on cognitive factors underlying rumor transmission from a utilitarian perspective (e.g., DiFonzo & Bordia, 2002; Kim & Bock, 2011). Accordingly, this current study first traces back through these studies to identify missing components in previous rumor research.

Chapter 3

LITERATURE REVIEW

Traditional View of Rumor Transmission: Utilitarian Perspectives

History of rumor research dates back eight decades (Prasad, 1935), and peaked during and after World War II (Rosnow, 1991). Especially, Allport and Postman's (1947) book *The Psychology of Rumor* was until recently an influential theoretical foundation for rumor research. Having studied wartime rumors, the authors viewed them as the products of people's efforts to interpret ambiguous or uncertain situations and inherently circulated as uncertain information without "secure standards of evidence being present" (Allport & Postman, 1947, p. 9).

Defined as "the psychological state of doubt about what current events mean or what future events are likely to occur" (DiFonzo & Bordia, 2002, p. 3), uncertainty hinders a person's goal to act effectively with the environment, and leads to feelings of lack of control. Resultantly, he or she is motivated to seek and gather information. But when such information is lacking from formal or official channels, people turn to each other, thereby generating and spreading rumors.

Related to their definition of rumors, Allport and Postman (1947) also proposed "the basic law of rumors," namely that the amount of rumor in circulation is a multiplicative function of the topic importance to rumor speakers and listeners and to the ambiguity of evidence relating to the topic at issue. According to this basic law, if either importance or ambiguity is zero, no rumor is circulated. And if a rumor includes information that seems important, it still can be circulated even when the situation is not

ambiguous, and *vice versa*.

The Allport and Postman (1947) view is shared in many definitions of rumor. For example, Shibutani (1966) defined rumor as “communication through which men caught together in an ambiguous situation attempt to construct a meaningful interpretation of it by pooling their intellectual resources” (p. 17). Similarly, DiFonzo and Bordia (2007) defined rumor as “unverified and instrumentally relevant information statements in circulation that arise in contexts of ambiguity, danger, or potential threat and that function to help people make sense and manage risk” (p. 13). These definitions indicate that rumors are generated and shared with a specific purpose, i.e., to establish the truth.

Based on this proposition, rumor research has focused on examining cognitive factors that play important roles in rumor transmission. In particular, rumor credence and topic importance have been the most influential drivers of rumor transmissions, as Bordia and DiFonzo (2005) noted:

Rumors arise and spread when people are uncertain and anxious about a topic of personal relevance to them and when the rumor appears credible given the sensibilities of the people involved in the spread (p. 87).

Rumor believability refers to the likelihood that a rumor is believable. This term is used interchangeably with *belief in rumor* (Bordia, DiFonzo, & Schulz, 2000), *credulity* (Kimmel & Audrain-Pontevia, 2010) or *credibility* (Kamins et al., 1997). Although the veracity of rumors is unknown to rumor recipients, they may assess rumor veracity / believability by evaluating its content against what they already hold to be true – i.e., knowledge, attitudes and useful facts – by using some rules of association such as source credibility, also known as heuristics (DiFonzo & Bordia, 2002).

From the utilitarian perspective, the higher the perceived believability of a rumor, the likelier it is to be shared with others (e.g., DiFonzo & Bordia, 2007; Kimmel & Audrain-Pontevia, 2010). Kimmel and Audrain-Pontevia (2010) argue that the transmission of *untrue* rumors can result in negative consequences for rumor spreaders, such as rejection from one's social group, or loss of repute. Therefore people would evaluate the credibility of a rumor before deciding whether to pass the message on to others. From this evaluation, only "believable or at least somewhat plausible" rumors are passed on to others (Kimmel & Audrain-Pontevia, 2010, p. 242).

Some studies support this view. In one investigating transmission of rumors concerning a volatile labor negotiation, Rosnow, Yost, and Esposito (1986) found that people are more likely to transmit a rumor they believe true than one they believe false. In their experimental work, Jaeger, Anthony, and Rosnow (1980) manipulated believability and found that increased belief resulted in more likelihood of transmission of the rumor. Similarly, Pezzo and Beckstead (2006) found a positive relationship between believability and transmission.

However, some studies suggest otherwise (Kamins et al., 1997; Tybout et al., 1981). Prasad (1935) noted a case where even extremely implausible rumors were transmitted. Although information was perceived to be less credible when it was labeled as rumor than when it was not, people appear similarly willing to transmit both types of the information, suggesting that skepticism about credibility does not entirely inhibit transmission. Overall, Rosnow's (1991) meta-analysis with six rumor studies found a moderate effect of rumor belief on rumor transmission ($r = .30$).

Topic importance refers to the significance of the issue to which the rumor

pertains. This term is used interchangeably with outcome-related involvement (DiFonzo & Bordia, 2002) or personal relevance (Kimmel & Audrain-Pontevia, 2010). Allport and Postman (1947) posited that importance was a necessary condition to rumor transmission.

Some conflicting results are evident also in the relationship between the importance of the rumor topic and its transmission. While some studies (e.g., Anthony & Gibbins, 1995; Rosnow et al., 1988; DiFonzo & Bordia, 2000; Kimmel & Audrain-Pontevia, 2010) showed that people were more likely to spread rumors rated higher in importance than those rated lower in importance, this pattern was not verified in other studies. For instance, in a study examining the effects of planting a false rumor concerning a student smoking marijuana during a final exam (Jaeger et al., 1980), participants who did not pass along the rumor rated the issue more important than those who did.

These inconsistent results regarding the impact of rumor believability and topic importance on the utilitarian value of rumor transmission call attention to other perspectives of rumor transmission. To respond to this need, the current study introduces the hedonic role of rumors, derived from the concept of utilitarianism and hedonism in consumer marketing discipline.

Utilitarianism and Hedonism

Substantial discussion on utilitarian and hedonic motives of product consumption in the marketing field has occurred, averring that consumer choices and consumption behavior are driven by two values: *utilitarian* and *hedonic*. The first *utilitarian* dimension refers to “instrumental,” and “functional,” while the second *hedonic* dimension is

conceptualized as “pleasure,” “excitement,” and “fun” (Dhar & Wertenbroch, 2000, p. 61).

Like research on rumors, early research on product consumption also focused on the utilitarian aspects a product or whole shopping experience can offer, which relate mainly to functional, task-related, and rational-motivated behavior (Miranda, 2009). From a utilitarian perspective, products are viewed as objective entities and consumers purchase or consume a product providing maximum utility, where utility typically is evaluated as a function of the product’s tangible attributes (Hirschman & Holbrook, 1982).

However, Holbrook and Hirschman (1982) were among the first to recognize the hedonic aspects of product consumption. They viewed consumers are often seeking products or services at least partially for sensory stimulation, emotional arousal, and self-esteem. From the hedonic consumption perspective, subjective symbols of a product, not objective entities, determine that product’s value.

The hedonic perspective of product consumption had gained interest in the 1950s, but the concept stems from Copeland’s earlier (1924) proposition that products are bought for either rational or emotional reasons. He recognized that when making product choices individuals are not completely rational, i.e., deliberately assessing the functional value of products, but also are influenced by a set of emotional desires.

From this hedonic perspective the seeking of emotional arousal is an important motivation for consumption of products, at least for some categories such as novels, sporting events and cigarettes (Hirschman & Holbrook, 1982). Emotions include joy, fear, happiness, and surprise. Regardless of emotional valence, either positive or

negative, emotional experiences still can be hedonic (Hirschman & Holbrook, 1982). Horror movies or rollercoaster rides, for example, provide little in the way of utilitarian benefits. Both provide high emotional arousal through what might be considered a negative emotion, for example, fear.

If one assumes that individuals consume products or services to maximize “sum-of-pleasures-minus-pains” (Hirschman & Holbrook, 1982, p. 96), consumption behavior related to negative emotions appears irrational. However, Hirschman and Holbrook (1982) viewed that purposeful experience of negative emotions enables consumers to build a “gradual tolerance” to frightening knowledge or to events they may experience in future (p. 96).

The utilitarian/hedonic framework of product consumption can be extended also to product classes. Although a product can have both hedonic and utilitarian attributes simultaneously (Chernev, 2004), some products are primarily utilitarian, others are primarily hedonic. For example, alkaline batteries and personal computers are classified as utilitarian while beer and sports cars are classified as hedonic (Dhar & Wertenbrogh, 2000; Voss et al., 2003), based on the determining criteria of product selection. That is, utilitarian product selection can be predicted best by the sum of functions or values their attributes can provide. In comparison, hedonic products fulfill emotional needs such as fun and enjoyment. Hedonically consumed products are selected by symbolic elements of the products rather than by their tangible attributes (Hirschman & Holbrook, 1982).

To measure utilitarian and hedonic dimensions of consumer attitudes toward product categories and different brands within categories, Voss et al. (2003) developed the hedonic and utilitarian (HED-UT) scale, using items such as effective, helpful,

functional, necessary, and practical, to measure utilitarian value, and fun, exciting, delightful, thrilling, and enjoyable, to measure hedonic value.

The utilitarian and hedonic framework has been studied widely in consumer marketing. For example, hedonic and utilitarian shopping values influenced different types of retail outcomes: Positive word-of-mouth correlated only with hedonic value, repatronage intentions correlated only with utilitarian value, and loyalty correlated with both hedonic and utilitarian values (Jones, Reynolds, & Arnold, 2006).

In the main, academic literature has focused on the moderating role of the utilitarian and hedonic value. The role of emotional arousal on the willingness to try innovative products was stronger when emphasizing hedonic aspects than utilitarian aspects of the products (Chaudhuri, Aboulnasr, & Ligas, 2010). Chandon, Wansink, and Laurent (2000) classified consumer benefits of sales promotions into utilitarian and hedonic benefits, and developed a benefit congruence framework of sales promotion effectiveness. For instance, according to them, monetary promotions are considered utilitarian benefits and as more effective for utilitarian products than for hedonic products. Using the benefit congruence framework, Montaner and Pina (2008) showed that promotions emphasizing utilitarian benefits were more effective in improving the brand image of utilitarian products than the brand image of hedonic products. In comparison, the effectiveness of promotions emphasizing hedonic benefits was opposite: They were more effective for hedonic products than for utilitarian products.

A recent research stream has focused on the utilitarian and hedonic dimensions of technology use, and suggests that technology or web consumption behaviors may be utilitarian, hedonic or a mixture of both. For example, Gu, Fan, Suh, and Lee (2010)

found that one's intention of using instant messaging was explained better by perceived hedonic usefulness (e.g., pleasure) and perceived utilitarian usefulness (e.g., performance improvement) together than by perceived utilitarian usefulness alone. Intention to use mobile services, however, was predicted only by utilitarian value, not by hedonic value (van der Heijden, Ogertschnig, & van der Gaast, 2005). A survey of 1162 members of a travel agency's Facebook page revealed behavioral differences in Facebook usage based on users' motivations (Pöyry, Parvinen, & Malmivaara, 2013). People with hedonic motivations not only browsed the community page but also participated in the community, while those with utilitarian motivations tended to browse the page without participating in the community.

Other studies found the moderating role of the utilitarian or hedonic value of technologies in relationships among antecedents of intention to continue. For example, Xu, Lin, and Chan (2012) found that the impact of perceived ease of use on one's intention to continue a smartphone was stronger for their high-utilitarian but low hedonic functions (e.g., phone, organizer) than were low-utilitarian but high-hedonic functions (e.g., camera, MP3 player). In comparison, the link between pleasure and intention to continue technologies was stronger for their high hedonic functions than their low hedonic ones.

In studies on viral marketing, the utilitarianism and hedonism framework can be useful also. In an experiment with students in Taiwan, Chiu, Hsieh, Kao, and Lee (2007) found that people were likely to forward both utilitarian and hedonic e-mail advertisements about a smart phone. In this experiment, the utilitarian message contained detailed information about price, product features and functions. The hedonic message

contained sweepstakes information. Schulze, Schöler, and Skiera (2014) suggested the moderating role of product type in the relationship between viral marketing strategies and their success. After analyzing 751 Facebook apps, the researchers showed that providing incentives was ineffective to promote app installation for primarily utilitarian products in primarily hedonic-oriented platforms such as Facebook.

Recently, dichotomizing tweets into utilitarian and hedonic, Dumlao and Ha (2013) extended the concept to classify information quality in social networking. *Utilitarian tweets* were defined as messages providing knowledge and contributing to a specific task or objective of Twitter users. *Hedonic tweets* were defined as messages providing entertainment, leisure, and enjoyment (Dumlao & Ha, 2013). Survey results showed that the hedonic quality of tweets was correlated positively with user satisfaction.

Inspired by these theoretical and empirical supports on utilitarianism and hedonism, this study introduces the hedonic motive to factors contributing to rumor transmission.

Rumor Transmission: Hedonic Perspectives

Although not a main focus of rumor research, rumor scholars have noted the hedonic or affective nature of rumors. In particular, the psychoanalytic community views rumors as fantasies enabling people to satisfy their unconscious desires (Kimmel, 2003). Jung (1959) classified rumors into two categories: (1) ordinary rumors; and (2) visionary rumors. The former reflect an individual's temporary needs. Contrastingly, the latter reflect "deeply felt emotion" shared by many (Kimmel, 2003). Jung's views are that rumors about Unidentified Flying Objects (UFOs), zombies, or Proctor & Gamble's trademark of a man in the moon believed to be the Church of Satan, can be classified into

the visionary rumor that signifies an unconscious wish for superior beings from another planet or that projects a feared scenario devised by active imaginations (Kimmel, 2003).

Several social psychologists also shared a similar view of rumors. For example, Knapp (1944) believed rumors to be similar to daydreams and fantasies, in that they express and fulfill emotional needs of the community. He emphasized the dual aspect of rumors as being *informative* and *expressive* in function (Knapp, 1944, p. 23); that is, some rumors mainly provide information while others mainly express an emotion or sentiment without information value.

Based on types of emotions expressed in rumor statements, Knapp (1944) classified rumors into three basic types: (1) *wish* rumors expressing a group's wishes and hopes, (2) *bogie* rumors derived from fears and anxieties, and (3) *wedge-driving* rumors expressing hostilities or hatred to divide groups (p. 23).

Allport and Postman (1947) also referenced subjective emotional conditions underlying rumors. They posited that rumors provide not only information helping people understand confusing or uncertain situations, but also act as a catharsis by enabling people to express their emotions.

Rumors can entertain oneself or others. Kishler et al. (1952) noted that rumors served to pass time. Knapp (1944) argued that in monotonous and boring environments, rumors arise to provide excitement and are shared with enthusiasm. He stated that army camps or prisons are always "fertile breeding ground for rumors" (Knapp, 1944, p. 35).

Although not in rumor research, the hedonic value of information sharing, especially in social media, also has been explored empirically. For example, Lee, Goh, Chua, and Ang (2010) found that people share mobile media content to seek

gratifications such as entertainment, as well as for information seeking and socializing. In Lee and Ma's study (2012), entertainment was a determinant in people sharing media news. Nov, Naaman, and Ye (2010) proposed enjoyment as an intrinsic motivation to encourage users to share photos within an online community. Collectively, previous studies propose the following motivational factors of information sharing in social media: socializing and maintaining relationships, information seeking, and entertainment.

Although these studies identified *socializing* as an independent driver of information sharing, this current study focuses only on informational and entertaining values of rumor mongering considering that rumor or information sharing, regardless of its informational or entertaining motive, is to interact with people, i.e., to socialize.

An indirect evidence of the hedonic value of rumor sharing comes from the fact that rumors often are shared even when unbelievable. In the social context, communication norms or expectations hold that message senders should provide only information they believe true and important (Grice, 1975). Gricean norms also hold that *recipients* expect all information from senders to be true and important. So, from a cognitive or utilitarian perspective, people would not share information if uncertain of its veracity, or explicitly would mention at least their doubts about its truth if they are able to share it.

However, according to a series of studies by Heath, Bell, and Sternberg (2001), people pass along not only plausible memes, but also implausible memes. The studies especially focused on emotions aroused by the memes. People indicated that they would pass along stories evoking emotions like interest, surprise or disgust. Stories that produced the highest level of disgust were likeliest to be passed along. Considering that

highly disgusting stories can be least plausible, their studies suggested that emotion can surpass truth in sharing the stories.

Other studies also suggest that the level of emotional arousal can be an important factor determining rumor transmission. Content-analytic studies of *New York Times* articles (Berger & Milkman, 2012) showed that news contents evoking high-arousal, either positive (awe) or negative (anger or anxiety), were more viral than contents evoking low arousal, or deactivating emotions (e.g., sadness). This effect was significant even after controlling other possible drivers of transmission such as content usefulness, prominent featuring of articles, and author fame. Also, in a series of experiments, the authors showed that the more a story evokes anger, the more likely it is to be shared. This tendency also was true for high arousal of positive emotion such as amusement, but the same tendency was not shown for low arousal emotion such as sadness. After reading a story designed to evoke strong sadness, people felt less arousal and were less likely to share the story, compared to people reading a story evoking weak sadness.

In sum, prior literature on rumor and other areas of communication studies regarding information sharing suggests that rumors are shared not only for their utilitarian value but also for their hedonic value. The utilitarian quality of rumors indicates an instrumental or functional purpose characterized as informational and cognitive, while the hedonic quality of rumors provides experiential enjoyment or excitement.

Rumor Types: Informational vs. Sensational

Inspired by literature in consumer marketing in which marketers categorize products based on their attributes and their utilitarian and hedonic values, this study also classifies rumors based on their messages features and their utilitarian or hedonic values.

To date, no study systematically discusses message characteristics of rumors. Although some studies content-analyzed statements made to discuss rumors in Internet discussion groups (e.g., Bordia & DiFonzo, 2004; Bordia & Rosnow, 1998), those focused on social interaction involved in rumor transmission, not rumor messages *per se*.

Not surprisingly, however, research in persuasion and other communication fields addresses relationships between some message characteristics and their effect (e.g., Hansen & Wänke, 2010; Morgan, 2003). Thus, a line of message features defined in previous research can be examined and adopted to identify rumor message features.

In this study, message features influencing rumor believability are named as rumor informational value (RIV). Likewise, message features influencing emotional arousal or sensory pleasure are named as rumor sensational value (RSV).

Rumor Informational Value. Given the assumption that some rumors have higher informational value than have others; they are perceived as more believable. In fact, communication literature including rumor literature has proposed several factors that might influence message believability, including message concreteness, authentication and hedging. Each of these factors will be reviewed briefly here.

Concreteness of information is defined as the extent to which the information contains specific details about actors, actions, and details of the situational context (Nisbett & Ross, 1980). In communication studies, concreteness has been manipulated frequently by adding more information or providing more detailed specific information (e.g., “headlines in *New York Times*, vs. “news coverage” (Frey & Eagly, 1993, p. 43).

This type of detailed information is found also in rumor statements. Bordia and DiFonzo (2004) content-analyzed and categorized rumor discussions circulated on

various Internet discussion groups. According to their classification, the *providing information* category defined as “statements that include material relevant to the rumor under discussion” (e.g., “It happened in 1968”) accounted for the third-highest percentage of message units (16.7 %) after *sense-making* statements such as “what could be happening is...” and *digressive* statements not directly relevant to the original rumor (p. 42).

Allport and Postman (1947) also observed similarly from wartime rumors in the 1940s. They averred that as a rumor travels, it tends to become shorter but remaining parts are reported with some details from the originally larger context. They called this pattern of change *sharpening* (p. 505). For example, “the precise amounts - \$500 and \$7000 - are mentioned” in rumor statements (p. 513). Furthermore, Allport and Postman (1947) argued that the use of concreteness renders the rumor more plausible.

In fact, persuasion research suggests that concreteness or information details relates to the perceived truth of information. Tversky and Kahneman (1982) state that “[Detailed scenarios] often appear more likely than less detailed scenarios, which are in fact more probable” (p. 98). For instance, detailed scenarios (e.g., a nuclear war between the United States and Russia triggered by the actions of a third country such as Iraq, Libya, Israel, or Pakistan) are judged as more plausible than less detailed scenarios (e.g., a nuclear war between the United States and Russia) (Plous, 1993).

Research on deception also shows that truthful answers are more likely than lies to contain “spatial details” (e.g., where an event occurred, how objects and people were located) or “temporal details” (e.g., when an event occurred or time order of a series of events) (Vrij, 2008, p. 1328). In addition, people seem to know this fact. Both lay persons

and police officers used the volume of details as cues to distinguish truth from lies (Akehurst, Köhnken, Vrij, & Bull, 1996).

This study also adds two more message features that may influence rumor believability, based on literature on rumors, namely authentication (Bordia & DiFonzo, 2004, p. 42) and hedging (Kamins et al., 1997).

Bordia and DiFonzo (2004) found that some rumor statements include “authenticating statements” such as “I read it in the *Wall Street Journal*” which may provide credence to rumors (p. 42). Similarly, Knapp (1944), in charge of the Massachusetts Committee of Public Safety in the 1940s, argued that “From whatever humble beginning a rumor may spring, it is soon attributed to a high authoritative source. This gives the rumor both prestige and the appearance of veracity” (p. 30).

The bulk of research indicates that messages from credible or authoritative sources are more believed and persuasive (Hovland & Weiss, 1951; Petty, Cacioppo, & Goldman, 1981). A similar effect of source credibility on rumor believability can be expected. It should be noted that multiple source layers exist in rumor transmission, such as the original source of information and a rumor communicator. This current study, examining message characteristics of rumors, focuses on the original source communicated as a part of rumor content.

Empirical studies testing the relationship between source credibility and rumor believability are limited. However, Blake, McFaul, and Porter (1974) offered indirect evidence, namely that when people heard a rumor that “a man with a hatchet would kill several coeds at a small college in Ohio” (p. 7), a majority attributed the rumor source to a newspaper or radio channel. Taken together, these studies indicate that authenticating

statements included in the rumor, regardless of their actual truth, render the rumor believable.

Alternatively, some rumor statements signal that information is tentative or uncertain. For example, people may share information with a label of “rumor” or phrases such as “I am not sure if this is true or not” to indicate the provider’s uncertainty about the veracity of the information (Bordia & DiFonzo, 2004, p. 39). This type of hedging in rumors is likely to decrease their believability. In communication literature, hedges are defined as “linguistic elements such as *perhaps*, *might*, *to a certain extent*, and *it is possible that*,” used to signal tentativeness or caution while expressing information (Crismore & Kopple, 1988, p. 184). During interpersonal communication, hedging often is used to meet and protect face needs (Brown & Levinson, 1978). Reports of scientific research also use hedging to indicate scientific uncertainty of information (Jensen, 2008).

Rumors are unverified information that also is subject to hedging. Spreading a rumor that might be false information involves social risk. If proven false, its transmitter could lose his or her reputation as a reliable and trustworthy source (Kamins et al., 1997). To avoid responsibility for what is being said, people may communicate rumors with a disclaimer indicating they are rumors or speakers do not yet know the truth.

Some studies refer to hedging’s impact on rumor believability. For example, Smith (1947) tested message believability with a set of fictitious news statements about the Soviet Union after labeling them as “actual facts,” “unverified rumors,” or with no label at all. People believed fact-labeled statements more strongly than unlabeled or rumor-labeled statements. However, although the rumor-labeled statements were slightly less believed than the unlabeled statements, the difference was small. Another study by

Kamins et al. (1997) showed that labeling information as a rumor decreased its credibility.

Taken together, converging evidence is that rumor believability relates to at least three message characteristics: (1) concreteness; (2) authentication; and (3) hedging. While hedging is expected to decrease rumor believability, the other two factors are expected to increase rumor believability.

Rumor Sensational Value. As of January 4, 2014, a Google search of the term “sensational rumor” or “sensational rumors” generates 35,200 results altogether. Although many people “state” that a rumor is “sensational,” they may not be able to define exactly what causes it to be thus categorized. The sensational power of these rumors might be attributed to rumor topics. Equally possible is that stylistic or message features of rumors - such as words, visuals - or message repetitions may contribute to that sensational power.

The definition of “sensationalism” has been developed in a limited number of studies on communication; notably, even *it* is outcome-based. For example, in journalism studies, sensational news refers to news that can trigger emotional reactions in audiences (Graber, 1994). Scholars often define *sensationalism* as “a content feature characterized by the power to stimulate media audiences’ senses” (Uribe & Gunter, 2007). Sensational news provokes emotional responses or physiological arousal among audiences (Grabe, Zhou, & Barnett, 2001). These effects on the human sensory system are driven not only by sensational topics such as crime, but also by presentation style such as the use of emotion-laden words (Uribe & Gunter, 2007).

Relatedly, in health communication, message sensational value (MSV) has been

developed and extensively applied when designing public service announcements (Morgan et al., 2003). Originally, MSV was conceptualized to represent the degree to which formal and content audiovisual features of a message elicit sensory, affective, and arousal responses (Everett & Palmgreen, 1995; Palmgreen et al., 1991). That is, MSV comprises content features which can be created or manipulated by message creators. In comparison, sensory, affective, and arousal responses to MSV are perceived effects of MSV, so are named as *perceived* MSV (PMSV) (Everett & Palmgreen, 1995).

Morgan et al. (2003) identified several message features of public service announcements (PSAs) which have positive relationship with PMSV. Among them, message features appearing to have the strongest link to PMSV were the use of intense images, acting out rather than simply describing the consequences of drug use (or the PSA storyline), sound saturation and sound effects, employing an unexpected antidrug message format, and creating a surprise or twist ending to the PSA.

The concept of MSV (Morgan et al., 2003) has been well-developed and tested extensively in televised PSAs. However, it is outside the scope of this study to examine, for instance, the use of sound effects or acting out. Thus, although this study borrows the concept of MSV leading to emotional arousal, this study identifies sensational features of rumor statements based on journalism- and other communication- literature.

In particular, Schaffer's content analysis *Shocking Secrets Revealed! The Language of Tabloid Headlines* (1995) proved useful for ideas on sensational features of messages. This study can be relevant to identify sensational features of rumors because, to gain attention, both rumors and tabloids might need to sensationalize their stories.

Referring to Schaffer's study, studies on rumors and rumor messages in

circulation were examined carefully to identify message features in rumor statements that might contribute to emotional arousal. Through this process, six sensational features of rumors were identified: content-rich vocabulary, human-interest topic or object, supernatural- or mysterious- phenomena, physical deformities or freakish physical accomplishments, stereotyping, and literary- or poetic- devices.

For example, as in the tabloid, some rumors apparently use “content-rich vocabulary” containing emotional connotations such as “weird,” “sizzling,” “stripped,” (Schaffer, 1995, p. 26). Rumors sometimes are merely imaginative or supernatural as well. An example is “H1Z1 flu outbreak (variant of H1N1 swine flu) resulted in folks turning into zombies.”

“Physical deformities or freakish physical accomplishments” (Schaffer, 1995, p. 30) also frequently are used in rumor statements (e.g., “Patron dining at a Wendy’s fast food outlet found a human finger in her bowl of chili”). Some topics — e.g., sex — likely to have a high emotional charge also are commonplace in rumor statements. Allport and Postman (1947) declare “Sex, as a proposition for topic interest, is a never failing target for rumor.” (p. 509). In fact, many rumors include matters pertaining to sex (e.g., “A human penis found in a jar of fruit punch”).

These sensational features are likely to be added when rumors are passed person to person. In particular, when people transmit rumors for hedonic reasons, they are less likely to be concerned about information accuracy, and more likely to exaggerate or sensationalize information to render it even more attention-getting or entertaining.

A study examining changes in repeated reports by the same person showed that the central idea of the report remained relatively constant but peripheral items become

more exaggerated or imaginative (Hartgenbusch, 1933). Ramnoux (1948) also observed that distortions during the process of rumor transmission involved wishful thinking and imagination.

In addition, long known is that one way to arouse emotions in communication is to use intense and colorful languages. For instance, Witte (1993) recommends the use of vivid and intense language in a high-fear appeal, and neutral, bland and impartial language in a low-fear appeal. Likewise, in studies showing the relationship between message vividness and emotional arousal, vividness has been operationalized as the use of vivid, colorful, intense and emotion-laden languages. For example, a study by Frey and Eagly (1993) included the vivid message such as “cold-blooded killing of innocent people,” “foaming martyrs,” and “hordes of shouting, terror-stricken people elbowing their way to the ticket counter” (p. 43). In comparison, the pallid version included phrases such as “deaths of many of its passengers,” “terrorists,” and “hundreds of people trying to reschedule their flights” (p. 43).

Many rumor statements include colorful or emotion-laden languages. Some examples can be “Ibuprofen increases susceptibility to *flesh-eating* bacteria,” “*Unholy* Cow! USDA Discovers *Mad* Cow Disease in California,” or “A woman in North Texas caught the *deadly* disease leptospirosis after drinking Coke from an unwashed can contaminated with dried rat urine.”

Referring to empirical findings in communication studies such as journalism- and health-communication, sensational rumor represents, in this study, the inclusion of emotion-laden or content-rich words. Some rumors might arouse emotions although they do not contain emotion-laden words. For example, rumors highly important to someone

may evoke emotions. However, important to note is that sensational rumors are defined in the current study as an inherent characteristic of the rumor statements, not as an audience-based variable.

Taken together, this study argues that different message features of rumor statements may determine their perceived believability and emotional arousal. Accordingly, the mechanisms through which rumors are transmitted differ.

Chapter 4

PROPOSED RESEARCH MODEL AND HYPOTHESES

This study's main goal is the development of a dual motive model of rumor transmission, proposing that the informational and sensational message features of rumors drive two distinct motives of rumor transmission, i.e., the utilitarian- and the hedonic- motives. Meeting this goal should result in better rumor rebuttal strategies because rumors can be controlled more effectively when rebuttal strategies match a person's motive of rumor transmission.

Based on theoretical arguments and empirical studies on rumor, utilitarianism and hedonism, and various communication topics such as information sharing, several hypotheses were developed:

The first set of hypotheses involves message features of rumor statements and their perceived effects. O'Keefe (2003) stated that "when message variations are defined in terms of intrinsic features, message manipulation checks, under that description, are unnecessary but similar measures may usefully be understood and analyzed as assessments of potential mediating states" (p. 251). Following this claim, this study manipulated informational and sensational features of rumor statements and their effects on psychological states were assessed as variables, not as manipulation checks.

In this study, rumor informational value (RIV) was manipulated to vary information concreteness and information label as rumor *vs.* news. Well established is that message concreteness relates to believability. The label *rumor* indicates its evidence is unconfirmed. In comparison, the label *news* indicates its evidence is confirmed. Thus it

is expected that rumors having high informational value are believed more than are rumors having low informational value.

On the other hand, rumor sensational value (RSV) was manipulated to vary the inclusion of emotion-laden words such as “explosive.” Accordingly, it is expected that rumors having high sensational value evoke emotions more than do rumors having low sensational value.

In sum, the following hypotheses are proposed:

H1: Rumor informational value (RIV) positively predicts rumor believability.

H2: Rumor sensational value (RSV) positively predicts emotional arousal.

Based on motivation research (e.g., Dichter, 1960) that people consume goods and services for two basic reasons, *utilitarian* gratification and *hedonic* gratification, this study also proposes two motives of rumor transmission. The *utilitarian* dimension relates to the usefulness of rumor information. Transmission of untrue rumors can result in negative consequences for rumor spreaders, such as rejection from one’s social group, or loss of reputation (Kimmel & Audrain-Pontevia, 2010). From the utilitarian perspective, therefore, rumor believability would be a necessary condition of rumor information usefulness. That is, the higher the perceived believability of a rumor, the likelier people will share the rumor for utilitarian purposes.

In comparison, the *hedonic* dimension results from *sensations* or *emotional arousal* from rumor information. Although the consumption of consumer goods involves both utilitarian and hedonic dimensions to varying degrees (Batra & Ahtola, 1990), the literature does document that some products are primarily utilitarian, others are primarily hedonic. That is, hedonic products are consumed because they provide an affective and

sensory experience of aesthetic or sensual pleasure, fantasy, and fun even when they do not have utilitarian values (Hirschman & Holbrook, 1982).

Likewise, rumors that do not have informational value can be shared if they provide an hedonic experience. Although not in rumor research, the hedonic value of information sharing, especially in social media, has been tested empirically. For example, scholars report that people share media content to seek gratifications such as entertainment (Lee et al., 2010; Lee & Ma, 2012).

Based on the theoretical and empirical accounts discussed above, this dissertation proposes the following hypotheses:

H3: Rumor believability positively predicts the utilitarian motive of rumor transmission.

H4: Emotional arousal positively predicts the hedonic motive of rumor transmission.

DiFonzo and Bordia (2007) viewed rumor transmission as a goal-directed behavior. Based on literature on motivations in social behavior, they suggested three motives to drive rumor-spreading behavior: (1) fact-finding motivations; (2) relationship-enhancement motivations; and (3) self-enhancement motivations. From a different perspective of motivations, this study proposes rumor transmission can be driven by two main motives, i.e., *utilitarian* and *hedonic*:

H5: The utilitarian motive of rumor transmission is positively related to the likelihood of rumor transmission.

H6: The hedonic motive of rumor transmission is positively related to the likelihood of rumor transmission.

The experience of emotion facilitates action. It long has been recognized that our bodies prepare for action during emotional processing (Frijda, 1987; Lang, Greenwald, Bradley, & Hamm, 1993). Research shows that emotional experiences activate motor areas of the brain (Bremner et al., 1999). Most recently, Hajcak et al. (2007) found that emotionally arousing stimuli, whether of positive or negative valence, increase motor cortex excitability.

Although emotion's facilitation of action is fundamentally adaptive and goal-oriented (Hajcak et al., 2007), strong emotional arousal (whether positive or negative) can lead one to have less discriminative use of information (Forgas, 1992; Gleicher & Weary, 1991), which then can lead to action regardless one's goals.

Studies also show that emotions, in particular negative emotions, open social communication such as storytelling and narration (Bruner, 1990), social comparison, and a search for emotional support (Schachter, 1959). Bruner (1990) argued that negative emotions stimulate motives for narration. Schachter (1959) claimed that individuals experiencing negative emotions such as anxiety would attempt to reduce such emotions by verbal interaction. After examining substantial literature on emotional impact on social interaction, Rimé (2009) claimed that both positive and negative emotions stimulate communication of emotional experiences, and called such process "the social sharing of emotion" (p. 65). Ample data also exist in support of this claim. For example, in a lab experiment, individuals who watched a movie of highly-intense emotion, talked more about their experience than did those who watched one of moderately-intense emotion, or an emotionless one (Luminet, Bouts, Delie, Masteau, & Rimé, 2000).

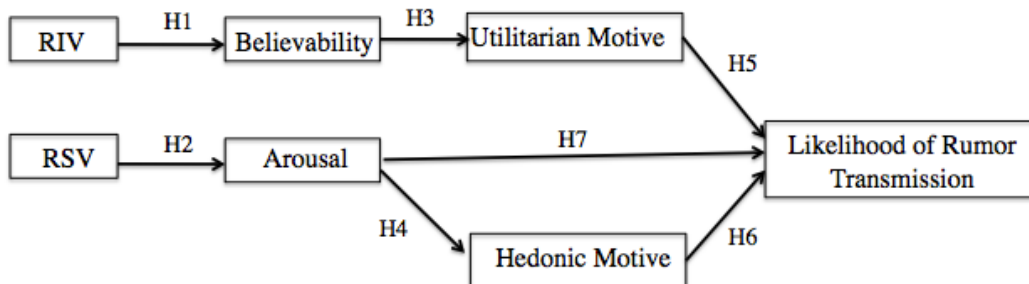
In the context of rumor transmission and word-of-mouth (WOM), emotional arousal also has been suggested as a strong driver of information sharing. Heath et al. (2001) showed that stories evoking emotions like interest, surprise, or disgust, are likely to spread. Content-analytic studies of *New York Times* articles (Berger & Milkman, 2012) showed that news contents evoking high-arousal, either positive (awe) or negative (anger or anxiety), were more viral than contents evoking low arousal, or deactivating emotions (e.g., sadness).

Accordingly, it is reasonable to predict that when people experience strong emotional arousal they will be more likely to transmit rumors, regardless their motivations, than when they experience weak emotional arousal:

H7: Emotional arousal directly and positively predicts the likelihood of rumor transmission.

In sum, the proposed research model (Figure 1) constitutes research hypotheses of this study.

Figure 1. Proposed Research Model – Utilitarian and Hedonic Motives of Rumor Transmission



Note. RIV= Rumor Informational Value; RSV = Rumor Sensational Value

Considering that some individuals may be primarily cognitive thinkers while others may be primarily sensation seekers (Zuckerman, 2007), this study explores individual differences possibly influencing the transmission of rumors based on their utilitarian or hedonic values.

Cognitive thinkers are rational and enjoy logical information. In that regard, this study focuses on one's need for cognition (NFC), defined as the tendency of individuals to engage in and enjoy thinking *per se* (Cacioppo & Petty, 1982). Advertising researchers have found that high-NFC individuals likely be oriented towards message-relevant thoughts and persuaded by high quality of information (Petty, Cacioppo, & Schumann, 1983). People with high NFC value tend to process information more thoroughly and cognitively, thus are more likely to give higher evaluation to informational rumors than to sensational or hedonic rumors.

On the other hand, some people seek sensory-emotional stimulation (Zuckerman, 2007). They enjoy receiving hedonic stimulation since it provides intrinsic gratification, arousal and emotion generally not considered pleasant. Accordingly, people having high need for sensation (NFS) are expected to enjoy rumors evoking emotions.

Therefore, in the specific context of this dissertation, the personal traits of NFC and NFS may play a crucial role in differentiating different motives of rumor transmission, which generates the below research questions.

RQ1: What is the moderating role of NFC to impact the rumor transmission process?

RQ2: What is the moderating role of NFS to impact the rumor transmission process?

Chapter 5

METHOD

This study's objective was to test the proposed model of rumor transmission that suggests the relationship between informational features of rumor (named as RIV) and sensational features of rumor (named as RSV), and the likelihood of rumor transmission.

Study Design and Participants

A 2 (RIV: low *vs.* high) X 2 (RSV: low *vs.* high) between-subjects design online experiment was employed. In total, 297 participants who use Twitter were recruited from communication-related classes at Michigan State University. In return for participation they received extra credit.

Twenty eight out of 297 participants in the experiment were excluded from data analyses for these reasons: (1) Five participants did not answer more than 80 % of the questionnaire; (2) Although rumor stimuli used in this study were created solely for this experiment, 23 participants answered they previously had heard the rumor they received in the experiment. Literature on the truth effect shows that familiar or repeated statements are believed more than new statements across many conditions such as trivia statements or product-related claims (Bacon, 1979; Roggeveen & Johar, 2002). To avoid possible confounding of perceived familiarity on the truth judgment of the rumor stimuli, participants who felt they heard the rumor before were excluded from data analyses.

Accordingly, 269 participants (136 females) were included in the analyses. The final sample size for each experimental condition is presented in Table 1. Participants' ages ranged 18 - 33 ($M = 21.02$, $SD = 1.71$), with 5.6% freshmen, 16.0% sophomores,

34.6% juniors, 41.3% seniors, and 1.9% unidentified. In the sample, 76.2% identified as Caucasian, 7.4% as African-American, 11.2% as Asian, 1.9% as Hispanic, 0.7% as Native American, 2.2% as others, and 0.4% unidentified.

Table 1. Sample Size

Condition		Rumor sensational value (RSV)	
		low	high
Rumor informational value (RIV)	low	70	64
	high	69	66

Stimuli

Generic soda products were selected as a test case because this product category long has been a subject of rumors, and is relevant to this study's participants who are undergraduates. Considering that social networking sites nowadays such as Twitter are major channels of rumor spread, Twitter rumors were used as stimuli.

Well known is that people in social networking sites change their perceptions of message credibility depending on the (supposed) gender or appearance of the message's author (Armstrong & McAdams, 2009). To avoid the confounding effect of such factors related to message source, a unisex name common to both males and females was used for the user name of the rumor tweet. Typically, a Twitter user's profile picture appears next to his or her tweet, but in the current study, a user image was not included in the stimuli. Maximum characters in each rumor statement was 140, the maximum permitted in a tweet.

In this study, RIV was manipulated by varying message features that influence

rumor believability and RSV was manipulated by varying message features that influence emotional arousal. Following prior research showing the positive relationship between message concreteness and believability (Hansen & Wänke, 2010; Morgan et al., 2003), high informational rumors included detailed information on a subject of rumor and a label of *news*. Sensational rumors included emotion-evoking words.

Using these message features, four versions of rumor messages were created: (1) low informational, low sensational rumor; (2) high informational, low sensational rumor; (3) low informational, high sensational rumor; and (4) high informational, high sensational rumor (see Appendix 1).

For example, the rumor statement for the low informational and low sensational condition explicitly stated that the information is a rumor, and the message did not include detailed information or any emotion-evoking words. In comparison, the message for the high informational and low sensational condition was framed as news and included detailed information about an issue. A hyperlink was also included in the message to imply more detailed information exists; however, participants could not click on it. The message for the low informational and high sensational condition did not have detailed information on the topic but contained emotion-laden words such as “alert,” “explosive,” and “rat feces.” The message for the high informational and high sensational condition contained both informational and sensational features.

To ensure rumor stimuli would manipulate perceptions as intended, a pilot test was conducted with 76 undergraduates to measure their perceptions on rumor

believability and emotional arousal. Because preliminary analysis¹ showed the rumor stimuli worked as intended, the study was continued and data from this preliminary test were included in the main result reported in this dissertation.

Procedure

This study's objective was to test the utilitarian and hedonic model of rumor transmission. However, considering that the term *rumor* has negative connotation in our society (Kamins et al., 1997), the term was not used when communicating with participants. Rather, they were invited to a study titled "*Your responses to product information.*"

After providing consent, participants randomly were assigned to one of the four message conditions. Random allocation of the four message conditions was achieved via a random URL-link generator. Before viewing the message, participants were asked about background information on their attitudes towards soda products, perceived importance of soda products, and perceived credibility of tweets.

¹ A 2 (RIV: high vs. low) X 2 (RSV: high vs. low) analysis of variance (ANOVA) test was conducted. Rumor believability and emotional arousal were measured using a 7-point response scale. RIV had significant main effect on rumor believability. The high informational rumor ($M = 4.27, SD = 1.30$) was believed more than the low informational rumor ($M = 3.33, SD = 1.37$), $F(1, 72) = 9.04, p = .004$. In contrast, RSV had significant main effect on emotional arousal. The level of emotional arousal was higher among participants who received the high sensational rumor ($M = 4.16, SD = 0.83$) than those who received the low sensational rumor ($M = 3.68, SD = 0.83$), $F(1, 72) = 4.85, p = .03$. A summary of the ANOVA results can be found in Appendix 2.

Next, they viewed one of the four messages, then were asked to respond to questions assessing their motives of rumor transmission. After again presenting the rumor statement each participant saw in the preceding section, rumor believability and emotional arousal were measured. Then participants were asked to write as many as possible names of those with whom they would like to share the rumor. This was to assess the likelihood of rumor transmission.

The order of measuring the variables, described above, was intentional to avoid question order bias. Well established is that preceding questions significantly influence respondents' answering subsequent ones in a survey (Schwarz, 1999). In particular, this study concerned about inflated or deflated correlation between the motives of rumor transmission and the likelihood of rumor transmission when subsequently measured. Hence, motives for rumor transmission were measured first, and likelihood of rumor transmission measured last. Rumor believability and emotional arousal were measured between them.

After measuring the likelihood of rumor transmission, participants' levels of need for cognition and need for sensation were measured. Last, self-reported demographic information was provided. At the end of the study, participants were debriefed.

Measures

Key variables were measured with multiple items. Question items were drawn from well-established literature, thus securing content validity. Additional measurement reliability and validity were secured by performing confirmatory factor analysis and checking discriminant/convergent validity.

Unless otherwise noted, participants rated items on a seven-point semantic

differential scale. Scale items used in this study are presented in Appendix 3.

Rumor Believability. Participants were asked to rate their responses to the Twitter rumor they read on a four-item semantic differential scale: untruthful/ truthful, not believable/ believable, not plausible/ plausible, and unrealistic/realistic (coded -3 to +3).

Emotional Arousal. In psychological literature, emotions are categorized in two ways, and both have been empirically examined (for a review, see Holbrook, 1986). One approach is the Mehrabian-Russell dimensions of pleasure, arousal, and dominance (PAD) viewing emotions in terms of continuous *dimensions* distinguishing among emotional states (Mehrabian & Russell, 1974). The other approach, proposed by Plutchik (1980), is that all emotions stem from a relatively small number of basic emotional *categories*.

After comparing these two typologies of emotion, Havlena and Holbrook (1986) concluded that Mehrabian and Russell's PAD dimensions allowed better analysis and comparison of emotions in consumption experiences. Mainly, the PAD framework has been used in consumer research on emotional experiences (e.g., Mano & Oliver, 1993).

Accordingly, the current study also used the PAD framework. Among the PAD dimensions of emotions, emotional arousal was the main interesting variable of this study. But the dimension of pleasure also was measured to assess the valence of emotions participants felt after reading the rumor statement.

Eleven items (Russell, 1980), representing pleasure and arousal dimensions, were included in the questionnaire (coded -3 to +3): six items for emotional arousal – relaxed/stimulated, calm/excited, sluggish/frenzied, dull/jittery, sleepy/wide-awake, and

unaroused/aroused; five items for pleasure – unhappy/happy, annoyed/pleased, dissatisfied/satisfied, melancholic/contented, and despairing/hopeful.

Rumor Transmission Motives. An initial questionnaire was generated and adapted from literature on rumor transmission and interpersonal communication motives. Five items were modified from DiFonzo and Bordia's scale (2007) measuring three types of motivations of rumor transmission: (1) fact-finding motivations; (2) relationship-enhancement motivations; and (3) self-enhancement motivations. To include hedonic motives of rumor transmission, seven items were adapted from the "pleasure" dimension of Rubin's interpersonal communication motive scale (Rubin, Perse, & Barbato, 1988). In addition, four items for measuring image outcome expectations (Huang, Lin, & Lin, 2009) were modified to fit the context of this study. For measuring the motive for information providing, three items were created (e.g., "the information is useful to others).

To identify the number of common factors that exist in the 19 items developed for this study, an exploratory factor analysis (EFA) was first conducted (Fabrigar, 1999). From the principal component analysis (PCA) using a varimax rotation, items that did not meet minimum criteria of having a primary factor loading of .60 or above, or no secondary loading of another factor of 0.4 or above, were eliminated. A final PCA for the remaining 17 items produced 4 factors of which eigenvalues are greater than one. They accounted for 79.42% of total variance. Factor loading matrix for this final solution is presented in Table 2.

Factor 1 (eigenvalue = 8.61), accounted for 32.18% of total variance. This factor included six items representing *the entertaining motive of rumor transmission*. Sample

items are “it peps me up,” and “it is entertaining.” Factor 2 (eigenvalue = 3.13) included four items such as “it improves my image” and “it improves other people’s recognition of me” accounting for 19.32% of total variance. This factor was named *social approval motive*. Factor 3 (eigenvalue = 1.38) included three items such as “it is beneficial to

Table 2. Exploratory Factor Analysis of the Motive Scale of Rumor Transmission – Final Factor Loadings

Items	Entertaining Motive	Social Approval Motive	Information -Providing Motive	Fact-Finding Motive
I enjoy it.	.89			
It is entertaining.	.83			
It will create a pleasant mood in me.	.83			
It is fun.	.82			
It peps me up.	.80			
It is stimulating.	.78			
It will make me feel good	.77			
It is thrilling.	.69			
it improves my image.		.84		
It improves other people’s recognition of me.		.84		
It builds up my reputation with others.		.82		
It helps me make friends with others.		.81		
The information is useful to others.			.86	
It is beneficial to others.			.84	
The information is important to others			.83	
I would like to see if other people know if the message is true or false.				.91
I would like to figure out whether or not the message is true or false.				.90
I would like to get more information on the message.				.90
Eigenvalue	8.61	3.13	1.38	1.17
Proportion of Variance	32.18%	19.32%	14.65%	13.26%

others” and “the information is important to others” accounting for 14.65% of total variance. This factor represented *information providing motive*. Factor 4 (eigenvalue = 1.17) included 3 items related to “fact-finding” motive such as “I would like to see if other people know if the message is true or false” and “I would like to figure out whether or not the message is true or false.” It accounted for 13.26% of the total variance. This factor was named *fact-finding motive*.

Likelihood of Rumor Transmission. In interpersonal communication, sharing non-credible information is perceived as undesirable (Grice, 1975). This can be a particular concern when participants are asked their intention to transmit rumors that do not have informational but only sensational value. The possibility may exist that participants are reluctant to reveal their true responses. Thus this study adopted special measures to assess more precisely participants’ likelihood to transmit rumors.

Participants were asked to imagine they share the message with as many as possible people they know, then list their names, separating each by a comma. If they were not likely to share the information at all, they were asked to write “I will not share the message at all” instead of listing the names. That is, *likelihood of Rumor Transmission* was operationalized as the number with whom participants are likely to share the rumor statement.

Moderating Variables

Need for Cognition (NFC). An 18-item NFC scale (Cacioppo, Petty, & Kao, 1984) was used. This version highly correlated ($r = .98$) with the original 34-item scale. Sample items are: “I find satisfaction in deliberating hard and for long hours;” “I prefer my life to be filled with puzzles I must solve;” and “Learning new ways to think doesn’t

excite me very much” ($\alpha = .85$). A mean response for each participant ($M = 4.43$, $SD = 0.77$) was created by summing and dividing by 18. A median split was used to categorize people as high *versus* low in NFC.

Need for Sensation (NFS). Participants completed an 8-item Sensation Seeking Scale (Hoyle, Stephenson, Palmgreen, Lorch, & Donohew, 2002) adapted from the 40-item Sensation Seeking Scale, Form V (Zuckerman, Eysenck, & Eysenck, 1978). Sample items are “I like ‘wild’ uninhibited parties” and “I enjoy spending time in the familiar surroundings of home” ($\alpha = .83$). A mean response for each participant ($M = 4.81$, $SD = 1.13$) was created by summing and dividing by 8. A median split was used to categorize people as high *versus* low in NFS.

Exogenous Control Variables.

The following three variables may affect mediating variables included in the proposed model such as emotional arousal and rumor believability, so they needed to be controlled.

Perceived importance of soda products. DiFonzo and Bordia (2002) argued that a personally relevant rumor can produce emotional tension which affects rumor transmission. In addition, depending on self-interested importance, different value relevance may exist (Boninger, Krosnick, & Berent, 1995). Accordingly, different motives would drive people to engage in behavior. Given that individual differences in each perception of product importance or relevance may affect the level of emotional arousal by rumor statements, or the motives of rumor transmission, perceived importance of soda products needs to be controlled.

Perceived importance of soda products was measured using a four-item semantic

differential scale (coded -3 to +3): unimportant/important, of no concern/of concern to me, irrelevant/relevant, means nothing to me/means a lot to me ($\alpha = .94$).

Attitude towards soda products. Substantial rumor research suggests that prior attitudes toward an object of rumor affect belief judgments about the rumor (DiFonzo & Bordia, 2007). That is, if a rumor supports or accords with what a person already holds true, it is plausible that he or she would assign greater credence to it. This variable was constructed by averaging the following a four-item seven-point semantic differential scale (coded -3 to +3): don't like/like, bad/good, not appealing/ appealing, and unfavorable/favorable ($\alpha = .90$).

Perceived credibility of tweets. Misinformation through Twitter is prevalent (Castillo, Mendoza, & Poblete, 2011). For example, on January 2011, rumors about a shooting in Oxford Circus, London, spread rapidly through Twitter. A survey shows that Twitter users are concerned about the credibility of tweets, particularly when the messages do not come from people whom they follow (Morris, Counts, Roseway, Hoff, & Schwarz, 2012). As the credibility of the media through which messages are delivered affect message believability (Atkin & Beltramini, 2007), perceived credibility of tweets was controlled.

This variable was constructed by averaging the following three-item seven-point semantic differential scale: unbelievable/believable, unconvincing/convincing, and not credible/credible (Choi & Rifon, 2002; MacKenzie & Lutz, 1989). The scale appeared to be reliable ($\alpha = .85$).

Chapter 6

RESULTS

Anderson and Gerbing (1988) and Hunter and Gerbing (1982) recommend a two-step approach in which model fit of the measurement models was assessed prior to estimating the proposed structural relations between the variables. This two-step approach minimizes the potential for “interpretational confounding” of constructs, compared to the one-step approach in which the measurement and structural models are estimated simultaneously (Anderson & Gerbing, 1988, p. 418).

Confirmatory Factor Analysis for Motives of Rumor Transmission.

Using both EFA and confirmatory factor analysis (CFA) is useful to refine the scale that is most relevant, valid and reliable (Fabrigar Wegner, MacCallum, & Strahan, 1999). A CFA was performed using AMOS 21. Four factors with their respective observed indicators were included in the measurement model: (1) entertaining motive; (2) social approval motive; (3) fact-finding motive; and (4) information-providing motive. Initial results indicated a relatively poor fit, $\chi^2 (129) = 403.17, p < .001$, CMIN/df = 3.13, Goodness of Fit Index (GFI) = .86, Comparative Fit Index (CFI) = .94, Normed Fit Index (NFI) = .91, Root Mean Square Error of Approximation (RMSEA) = .09

After removing items with low factor loading, the model became acceptable, $\chi^2 (48) = 74.64, p < .01$, CMIN/df = 1.56, GFI = .96, CFI = .99, NFI = .97, RMSEA = .05. However, as two factors (entertaining motive and social approval motive) were highly correlated ($r = .72$), the second-order factor structure was examined. The model was acceptable, $\chi^2 (49) = 75.24, p < .01$, CMIN/df = 1.54, GFI = .96, CFI = .99, NFI = .97,

RMSEA = .05. As the difference in fit between the first-order structure and the second-order structure was not statistically significant, $\Delta\chi^2_{(1)} = 0.60$, the second-order structure model was selected for further analysis. This included three factors: (1) fact-finding motive; (2) information-providing motive; and (3) *hedonic motive*, which was formed by two first-order factors (entertaining and social approval).

As both fact-finding motive and information providing motive are information-driven and utilitarian, another CFA was conducted to combine these two dimensions as the utilitarian motive of rumor transmission. However, it produced a Heywood case (i.e., negative variance), which indicates that one factor solution for the fact-finding and information-providing motives is grossly inappropriate for these data. Thus, the three-factor model finally was selected for further analysis.

Measurement Model Assessment

Five latent variables with their respective observed indicators were included in the measurement model: (1) believability; (2) emotional arousal; (3) fact-finding motive; (4) information-providing motive; and (5) hedonic motive. Although the initial measurement model was acceptable, $\chi^2 (197) = 230.16, p = .05$, CMIN/df = 1.17, GFI = .93, CFI = .99, NFI = .94, RMSEA = .03, the convergent validity for emotional arousal was weak with the average variance extracted (AVE) value of .44. Thus, three items having low factor loadings in the emotional arousal scale - sluggish/frenzied, sleepy/wide-awake and unaroused/aroused - were removed. Model fit indices were, $\chi^2 (140) = 187.32, p < .01$, CMIN/df = 1.34, GFI = .93, CFI = .99, NFI = .95, RMSEA = .04. All item-construct loadings were significant and above the .70 benchmark except “dull-jittery” for emotional arousal (standardized $\beta = .67$). Items and factor loadings from the final CFA model are

shown in Table 3. All variables in the model had more than three indicators,

Table 3. Final Measurement Items for Constructs

Construct		Items	Mean	SD	β	CR
Believability		realistic	3.74	1.64	.90	18.31
		believable	3.54	1.61	.92	19.00
		plausible	3.81	1.58	.81	15.64
		truthful	3.23	1.42	.82	
Emotional arousal		stimulated	4.12	1.12	.79	
		excited	3.76	1.08	.70	8.90
		jittery	3.73	1.20	.67	8.86
Hedonic Motive	Entertaining motive	It peps me up.	3.54	1.55	.81	14.79
		It is stimulating.	4.08	1.59	.82	15.04
		It will make me feel good	3.82	1.63	.85	15.81
		It is thrilling.	3.69	1.54	.81	
	Social approval motive	It improves my image.	3.40	1.47	.92	27.39
		It improves other people's recognition of me.	3.49	1.51	.95	
		It builds up my reputation with others.	3.48	1.57	.89	24.66
Information-providing motive		The information is useful to others.	4.85	1.43	.87	17.07
		It is beneficial to others.	4.81	1.49	.79	15.12
		The information is important to others	4.46	1.40	.87	
Fact-finding motive		I would like to see if other people know if the message is true or false.	4.58	1.65	.86	12.17
		I would like to figure out whether or not the message is true or false.	4.67	1.69	.95	

Note. SD = standard deviation; β = standardized beta weights; CR = critical ratio

excepting the fact-finding motive (two indicators). When the measurement model includes more than one variable, having two-indicators per variable is sufficient (Bollen, 1989).

The measurement model was validated using the following criteria: To demonstrate convergent validity, the AVE values for both constructs should be higher than the suggested threshold value of 0.50. The value of CR should exceed 0.7. The discriminant validity is satisfactory when the square root of the AVE for each construct is higher than the correlation of the construct and other constructs in the model (Chin, 1998). As shown in Table 4, CRs for the constructs ranged from .77 to .92, and AVEs for all constructs were above .50, suggesting convergent validity. The discriminant validity was also satisfactory. In Table 4, diagonal elements represent the square root of the AVE for each construct. Off-diagonal elements are the correlations among the constructs. As

Table 4. Overall Model Fit from the Confirmatory Factor Analysis

Construct	CR	AVE	1	2	3	4	5
1. Believability	.92	.75	.87				
2. Emotional Arousal	.77	.52	.33	.72			
3. Hedonic Motive	.85	.74	.15	.16	.86		
4. Information-providing motive	.88	.71	.28	.20	.44	.84	
5. Fact-finding motive	.90	.81	.26	.21	.17	.52	.90

Note. CR = construct reliability; AVE = average variance extracted; The diagonal elements represent the square root of the AVE for each construct. The off-diagonal elements are the correlations among the constructs.

χ^2 (140) = 187.32, $p < .01$, GFI = .93, CFI = .99, RMSEA = .04. GFI = global fit index; CFI = comparative fit index; RMSEA = root mean square error of approximation.

shown in Table 4, all diagonal elements were greater than their corresponding off-diagonal elements, suggesting that the respective constructs exhibit acceptable discriminant validity. The correlation table is presented in Table 5.

Table 5. Scale Statistics and Correlations for Key Variables

Variable	1	2	3	4	5	6	7	8	9
1	1								
2	.30**	1							
3	.27**	.15*	1						
4	.25**	.20**	.46**	1					
5	.12	.11	.37**	.15*	1				
6	.16**	.21**	.14*	.33**	-.00	1			
7	.01	.05	.06	.13*	-.06	.10	1		
8	.12*	.13*	.14*	.20**	.12*	.10	.68**	1	
9	.20**	.23**	.28**	.10	.25**	-.02	-.03	.10	1
α	.92	.76	.88	.90	.92	n.a.	.90	.94	.88
Mean	3.58	3.81	4.71	4.63	3.64	3.28	4.15	3.20	4.10
SD	1.41	0.86	1.29	1.59	1.29	4.48	1.65	1.57	1.18

Note. 1. Rumor believability, 2. Emotional arousal, 3. Information-providing motive, 4. Fact-finding motive, 5. Hedonic motive, 6. Likelihood of rumor transmission, 7. Attitude towards soda products, 8. Perceived importance of soda products, 9. Perceived credibility of tweets; n.a = not applicable; SD = standard deviation; * $p = .05$, ** $p = .01$ (two-tailed).

Assessment of the Structural Model.

The proposed research model was tested using AMOS 21, a structural equation modeling (SEM) program, with maximum-likelihood (ML) parameter estimation method. All constructs of the study were represented as latent variables. SEM was appropriate for examining the causal processes of rumor transmission between multiple variables (Anderson & Gerbing, 1988). SEM has been suggested as improving our understanding of the process of consumer behavior in experimental research (MacKenzie, 2001). Experimental designs have used dummy variables with SEMs in experimental designs

(e.g., Bagozzi & Yi, 1989; Chebat, Michon, Haj-Salem, & Oliveira, 2014).

Rumor informational value was dummy-coded: “0” for low informational value and “1” for high informational value. Likewise, rumor sensational value was dummy-coded. Then, two dummy-coded exogenous variables, five mediating variables, and one endogenous variable were allowed in the model, and paths among variables were added as hypothesized in the proposed research model. Three covariates, perceived credibility of tweets, attitudes towards soda products, and perceived importance of soda products, also were added.

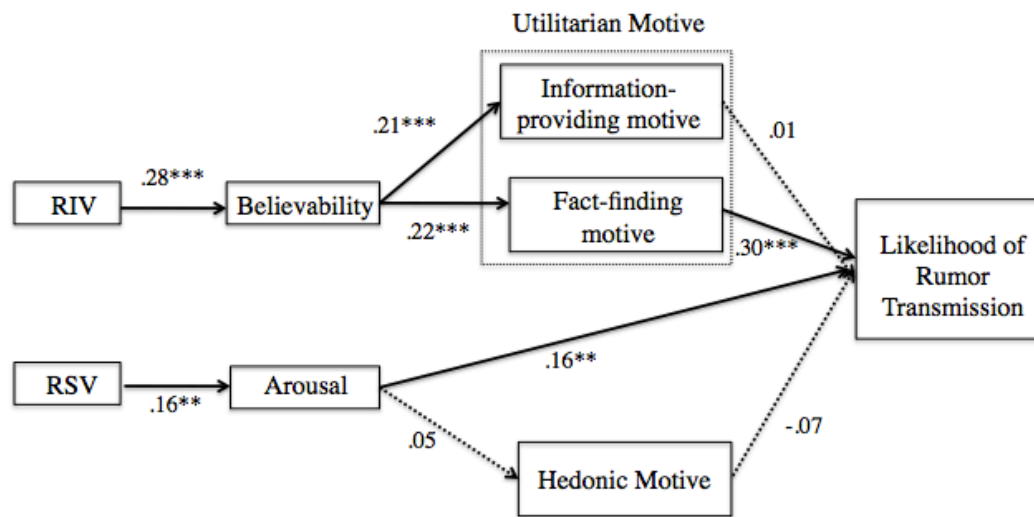
Fit indices of the proposed research model indicated an acceptable fit with data, CMIN/df = 2.43, GFI = .96, CFI = .91, RMSEA = .07. The model χ^2 statistic was significant ($\chi^2 (27) = 65.72, p < .001$) as expected, considering the relatively large sample size of this study ($n = 263$) (Kline, 1998).

Results of assumption evaluations suggested that the scores of the likelihood of rumor transmission was violating normality assumption, having the absolute values of skewness and kurtosis of 1.40 and 1.53, respectively. Most researchers consider the values between 1.0 and about 2.3 to be moderate nonnormality (Lei & Lomax, 2005). However, it is known that SEM is robust to the violation of normality assumption. A simulation study shows that even severe nonnormality conditions have negligible effects on parameter estimates and fit indices (Lei & Lomax, 2005). Therefore, the usual interpretation of the current study’s results can be accepted. Figure 2 shows the result of AMOS analysis for the proposed research model with standardized path coefficients with p -values.

Control Variables

Three control variables were included when assessing the proposed model. Perceived importance of soda products, attitude towards soda products and perceived credibility of tweets were predicted to influence rumor believability, emotional arousal, and three motives of rumor transmission.

Figure 2. Results of Standardized AMOS Analysis for the Proposed Research Model



Note. ** $p < .01$, *** $p < .001$. All numbers on the paths are standardized data; RIV = rumor informational value; RSV = rumor sensational value; Solid lines indicate significant paths and dotted lines indicate nonsignificant paths; Control variables and disturbance terms are not shown for simplicity.

$\chi^2 (27) = 65.72, p < .001, GFI = .96, CFI = .91, RMSEA = .07$.

Attitude towards soda products was related only to the hedonic motive of rumor transmission ($\beta = -.21, p = .007$). Perceived importance of soda products was positively related to the fact-finding motive ($\beta = .15, p = .06$) and the hedonic motive ($\beta = .24, p = .003$). It appeared that perceived credibility of tweets was positively related to all variables except the fact-finding motive. Path coefficients from perceived credibility of tweets to rumor believability ($\beta = .20, p < .001$), arousal ($\beta = .23, p < .001$), information providing motive ($\beta = .23, p < .001$), and hedonic motive ($\beta = .20, p < .001$) were all significant and positive. Although not a formal hypothesis here, more work would enhance understanding of how credibility of media channels through which rumor is transmitted influences the rumor transmission process.

Hypotheses Testing

H1: Impact of rumor informational value (RIV) on message believability

Hypothesis 1 predicted that rumor informational value would be related positively to message believability. As shown in Figure 2, rumor informational value (RIV) predicted message believability of rumor recipients ($\beta = .28, p < .001$). Thus, H1 was supported.

H2: Impact of rumor sensational value (RSV) on emotional arousal

Hypothesis 2 predicted that rumor sensational value (RSV) would predict emotional arousal among rumor recipients. As expected, sensational features in the rumor statement had a positive effect on the emotional arousal elicited by the rumor statement ($\beta = .16, p < .01$). Thus, H2 was supported.

H3: Impact of message believability on rumor transmission motives

Hypothesis 3 predicted that message believability is positively correlated to the

utilitarian motive of rumor transmission. As shown in Figure 2, message believability significantly related to the utilitarian motive for self, i.e., fact-finding motive ($\beta = .22, p < .001$) and the utilitarian motive for others, i.e., information-providing motive ($\beta = .21, p < .001$). Thus, H3 was supported.

H4: Impact of emotional arousal on rumor transmission motive.

H4 predicted that a higher level of emotional arousal would lead to stronger hedonic motive of rumor transmission. This hypothesis was not supported. The emotional arousal elicited by the rumor statement did not predict the hedonic motive of rumor transmission ($\beta = .05, p = .42$).

H5, H6: Impact of rumor transmission motives on the likelihood of rumor transmission.

H5 predicted that participants would be more likely to transmit the rumor when they have stronger utilitarian motives. As shown in Figure 2, only utilitarian motive for self (i.e., fact-finding motive) was significantly and positively correlated with the likelihood of rumor transmission ($\beta = .30, p < .001$). The utilitarian motive for others (i.e., information-providing motive) did not predict significantly the likelihood of rumor transmission ($\beta = .01, p = .93$). Thus, H5 was partially supported.

H6 predicted that participants would be more likely to transmit the rumor when they have stronger hedonic motives. H6 was not supported. The path from the hedonic motive to the likelihood of rumor transmission failed to reach significance at the level of .05 level. ($\beta = -.07, p = .25$).

H7: The direct impact of emotional arousal on the likelihood of rumor transmission.

H7 predicted that emotional arousal would predict positively the likelihood of rumor transmission. Results show that emotional arousal had a positive and direct effect on the likelihood of rumor transmission ($\beta = .16, p < .01$), supporting H7.

RQ1: Differential impact of RIV and RSV on the rumor transmission process by the level of need for cognition

To test whether there is any significant change in strength of the rumor transmission process by the level of need for cognition, a multigroup analysis was conducted using AMOS 21.

Before multigroup SEM is conducted, it is necessary to verify the measurement equivalence or invariance, which addresses whether the same models hold true across different groups. To diagnose measurement equivalence between low need for cognition group and high need for cognition group, a constrained confirmatory factor analysis was conducted and compared with the unconstrained model conducted previously. This comparison yielded a χ^2 difference value of 18.62 with 13 degrees of freedom, which was not statistically significant at the .05 probability level, indicating that the factor structure was not different across the two groups (Table 6). All the fit statistics of the constrained and unconstrained models were acceptable.

Table 6. Multigroup Confirmatory Factor Analysis – NFC

Model	χ^2	df	<i>p</i> value	GFI	CFI	RMSEA
Unconstrained model	379.33	280	< .001	.88	.97	.04
Constrained model	397.95	293	< .001	.87	.97	.04
Comparison test	18.62	13				

Note. df = degrees of freedom; GFI = global fit index; CFI = comparative fit index; RMSEA = root mean square error of approximation.

Because the measurement equivalence was satisfied, a multigroup comparison test was performed to evaluate whether any path in the model is significantly different across the two groups. Each causal path was constrained equally between the two groups, and the model with each constrained path was contrasted against the fully unconstrained model. If the χ^2 value of a model with any constrained path becomes significantly worse than that of the fully unconstrained model, it indicates that the coefficient of the constrained path is significantly different across the different conditions (Kline, 1998). The results of the multigroup comparison test indicated that no path was significantly different across the two groups.

However, although the difference was not significant, some patterns were observed. The path from RIV to message believability was stronger among those with high need for cognition ($\beta = .36, p < .001$) than among those with low need for cognition ($\beta = .17, p = .03$). A similar pattern was observed for the path from RSV to emotional arousal. RSV correlated significantly with emotional arousal in the high need for cognition group ($\beta = .22, p = .01$). However, the relationship was not significant in the low need for cognition group ($\beta = .08, p = .31$). In contrast, the path from believability to the utilitarian motive of rumor transmission was stronger in the low need for cognition group than in the high need for cognition group. In particular, the path from believability to the information-providing motive was significant in the low need for cognition group ($\beta = .29, p < .001$), while not significant in the high need for cognition group ($\beta = .14, p = .30$).

Overall, however, the rumor transmission process was similar across the two groups. The standardized beta coefficients for all paths for the two groups are reported in

Table 7.

Table 7. Rumor Transmission Base Model Comparison with Low-High NFC Groups and Low-High NFS Group

Relationship	Base Model	NFC		NFS	
		Low	High	Low	High
RIV → believability	.28 ***	.17 *	.36 ***	.33 ***	.24 **
RSV → arousal	.16 **	.08 n.s.	.22 **	.11 n.s.	.22 **
Believability → information-providing motive	.21 ***	.29 ***	.14 n.s.	.14 n.s.	.28 ***
Believability → fact-finding motive	.22 ***	.23 **	.20 *	.16 n.s.	.27 ***
Arousal → hedonic motive	.05 n.s.	.03 n.s.	.01 n.s.	.10 n.s.	-.02 n.s.
Utilitarian motive for others → likelihood of rumor transmission	.01 n.s.	.04 n.s.	-.04 n.s.	.03 n.s.	-.02 n.s.
Utilitarian motive for self → likelihood of rumor transmission	.30 ***	.30 **	.32 ***	.26 **	.35 ***
Hedonic motive → likelihood of rumor transmission	-.07 n.s.	-.18 *	.05 n.s.	-.11 n.s.	-.04 n.s.
Arousal → likelihood of rumor transmission	.16 **	.15 n.s.	.18 *	.21 *	.13 n.s.
χ^2	65.72	91.21		116.69	
df	27	54		54	
GFI	.96	.94		.93	
CFI	.91	.92		.86	
RMSEA	.07	.05		.07	

Note. * $p < .05$, ** $p < .01$, *** $p < .001$. n.s = non-significant; df = degrees of freedom; GFI = global fit index; CFI = comparative fit index; RMSEA = root mean square error of approximation.

RQ2: Differential impact of RIV and RSV on the rumor transmission process by the level of need for sensation.

Measurement equivalence test between low need for sensation group and high need for sensation group was conducted. The comparison between the constrained confirmatory factor analysis and the unconstrained model yielded a χ^2 difference value of 9.71 with 13 degrees of freedom, which was not statistically significant at the .05 probability level, indicating that the factor structure was not different across the two groups (Table 8). All the fit statistics of the constrained and unconstrained models were acceptable.

Table 8. Multigroup Confirmatory Factor Analysis – NFS

Model	χ^2	df	<i>p</i> value	GFI	CFI	RMSEA
Unconstrained model	386.11	280	< .001	.88	.97	.04
Constrained model	395.82	293	< .001	.87	.97	.04
Comparison test	9.71	13				

Note. df = degrees of freedom; GFI = global fit index; CFI = comparative fit index; RMSEA = root mean square error of approximation.

Although the rumor transmission process was similar across the two groups, however, an interesting observation was that the impact of rumor believability on the utilitarian motive of rumor transmission was stronger in the high need for sensation group than in the low need for sensation group. The two paths, rumor believability → information-providing motive ($\beta = .28, p < .001$) and rumor believability → fact-finding motive ($\beta = .27, p < .001$) were significant in the high need for sensation group.

However, both paths were not significant in the low need for sensation group: $\beta = .14$ (n.s.) for rumor believability → information-providing motive; $\beta = .16$ (n.s.) for rumor

believability → fact-finding motive.

Testing Indirect Effects

In testing the mediation effect ($X \rightarrow M \rightarrow Y$), Baron and Kenny's (1986) traditional approach requires the significance of the direct effect ($X \rightarrow Y$). In a modern approach, recommended by Hayes (2009), a significant direct effect is not always necessary for mediation to occur. For example, the relationship between X and Y can be insignificant if two or more indirect paths exist, not all of which may be a part of the formal model, and they operate in opposite directions, thus canceling out each other. In this case, some prefer to avoid the term *mediator* when describing M, instead referring simply to X's indirect effect on Y through M (see Mathieu & Taylor, 2006, for a discussion of the distinction between indirect effects and mediation).

The present study did not show the significant relationships between manipulated informational value and sensational value of rumor statements, and outcome variable, the likelihood of rumor transmission. However, following Hayes' approach, all significant relationships observed in the proposed model were decomposed into direct, indirect, and total effects for further analysis.

As Hayes (2009) recommends, this study used bootstrapping (5,000 bootstrap samples) to examine the significance of the indirect effect of intervening variables.

As expected, all path coefficients involved in causal links between rumor informational value and sensational value, and the likelihood of rumor transmission, were positive and significant. Rumor informational value had a significant indirect effect on both fact-finding and information providing motives through rumor believability. However, only the fact-finding motive mediated the relationship between rumor

believability and the likelihood of rumor transmission. Rumor informational value also had a significant indirect effect on the likelihood of rumor transmission. As proposed in the model, emotional arousal mediated the relationship between rumor sensational value and the likelihood of rumor transmission.

Revised Model Specification

Although the model this study proposed showed acceptable fit, modification indices suggested adding a reciprocal path between rumor believability and emotional arousal. In an attempt to improve model fit, model specifications suggested by data were considered.

Widely accepted is that emotions have two-dimensional structure: *affective* and *cognitive* (Lang et al., 1993). Unlike affective components of emotions which are non-cognitive, cognitive components of emotions have representational content which beliefs and desires can influence (Nicolle & Goel, 2013). Thus, it is plausible that the more believable a rumor is, the more likely people experience emotion.

On the other hand, Kishler et al. (1952) comments that rumors gain credibility when presented in an interesting and dramatic manner and arouse emotions and transitory feelings of vanity. To be believed, the rumor must tap strong wishes or anxieties and, last but not least, must be presented dramatically, emotionally and credibly. DiFonzo and Bordia (2002) also suggested that the more anxious and concerned people are, the more likely they are to believe a rumor, based on their path analysis of survey data. Thus, also plausible is that the more a rumor evokes emotion, the more likely it is believed.

Taken together, the reciprocal path between rumor believability and emotional arousal was added. The incorporation of this path yielded a better fit to the data than the

hypothesized model, $\chi^2 (25) = 41.22, p = .02$, CMIN/df = 1.65, GFI = .97, CFI = .96, RMSEA = .05. The difference in fit between the hypothesized model and the revised model was statistically significant, $\Delta\chi^2_{(2)} = 24.56$. However, although the path believability $\rightarrow$ arousal was significant ($\beta = .56, p < .01$), the opposite path, arousal $\rightarrow$ believability, was not ($\beta = -.36, p = .11$).

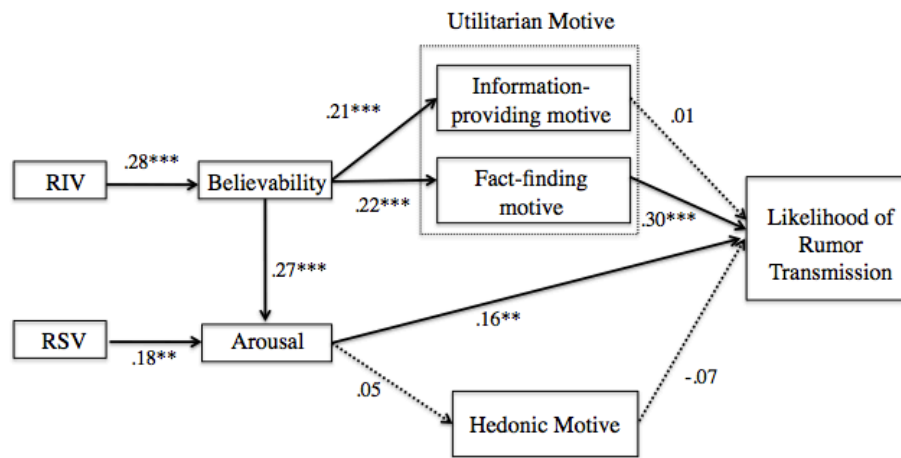
Thus, the reciprocal path between rumor believability and emotional arousal was replaced with a causal path from believability to arousal. Fit indices indicated an acceptable fit between model and data, $\chi^2 (26) = 44.49, p = .01$, CMIN/df = 1.71, GFI = .97, CFI = .96, RMSEA = .05. As this recursive model was statistically different from the hypothesized model, $\Delta\chi^2_{(1)} = 21.23$, but not statistically different from the non-recursive model, $\Delta\chi^2_{(1)} = 3.27$, the recursive model was selected as the final model. Figure 3 shows the result of AMOS analysis for this modified model with standardized path coefficients with p -values.

Additionally, an alternative model having a direct path from believability to the likelihood of rumor transmission was tested. The result showed an adequate fit to data, $\chi^2 (26) = 65.05, p < .001$, CMIN/df = 2.50, GFI = .96, CFI = .91, RMSEA = .08. However, the model did not show significant improvement from the originally proposed model, $\Delta\chi^2_{(2)} = 0.67$, and the path from believability to the likelihood of rumor transmission was not statistically significant ($\beta = .05, p = .40$), indicating believability influences the likelihood of rumor transmission only via the fact-finding motive.

The proposed model was tested also, separating the hedonic motive of rumor transmission into its two first-order factors, i.e., entertaining, and social approval. The measurement model with these first-order factors still was valid. Although the

entertaining motive and social approval motive were highly correlated ($r = .72$), the square root of the AVE for each construct was higher than the correlation of the construct and other constructs in the model (Chin et al., 2003), demonstrating the discriminant validity.

Figure 3. Results of AMOS Analysis for the Modified Model



Note. All numbers on the paths are standardized data; RIV = rumor informational value; RSV = rumor sensational value; Solid lines indicate significant paths, dotted lines indicate nonsignificant paths; Control variables and disturbance terms are not shown, for simplicity; ** $p < .01$, *** $p < .001$.

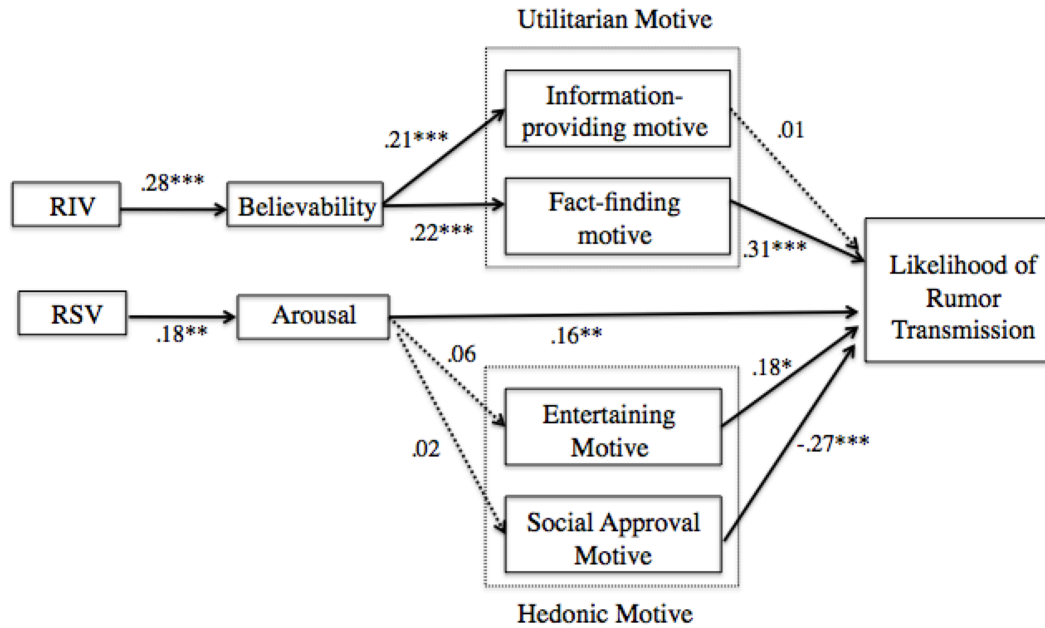
$\chi^2 (26) = 44.49, p = .01$, GFI = .97, CFI = .96, RMSEA = .05. GFI = global fit index; CFI = comparative fit index; RMSEA = root mean square error of approximation.

The fit indices of the model containing four different motives of rumor transmission indicated an acceptable fit with the data, CMIN/df = 2.13, GFI = .96, CFI =

.91, RMSEA = .08. The model statistic was significant, $\chi^2(24) = 61.77, p < .001$. Figure 4 shows the result of AMOS analysis with standardized path coefficients with p-values.

As shown in Figure 4, the emotional arousal elicited by the rumor statement did not predict both the entertaining motive ($\beta = .06, p = .33$) and social approval motive of rumor transmission ($\beta = .02, p = .74$). However, the influences of two motives on the likelihood of rumor transmission both were significant but their directions were opposite. The entertaining motive correlated positively with the likelihood of rumor transmission ($\beta = .18, p = .02$) while the social approval motive correlated negatively with the likelihood of rumor transmission ($\beta = -.27, p < .001$).

Figure 4. Results of AMOS Analysis for the Model with the First-Order Factors of Rumor Transmission Motives



Note. All numbers on the paths are standardized data; RIV = rumor informational value; RSV = rumor sensational value; Solid lines indicate significant paths, dotted lines indicate nonsignificant paths; Control variables and disturbance terms are not shown, for simplicity; ** $p < .01$, *** $p < .001$.

$\chi^2 (24) = 61.77, p = .01, GFI = .96, CFI = .91, RMSEA = .08.$

Chapter 7

DISCUSSION

Main motivation for this study was to assess the role of emotions aroused by sensational rumor statements and the hedonic motive of rumor transmission, which has received little attention in traditional rumor research. This study proposed and tested a conceptual model, a dual motive model of rumor transmission, in which informational and sensational message features of rumors drive two distinct motives of rumor transmission, namely utilitarian and hedonic. Rumor believability and emotional arousal were proposed as mediating variables for the utilitarian motive process and for the hedonic motive process, respectively. This study also proposed and tested a direct effect of emotional arousal on the likelihood of rumor transmission. Data provided insights into the predicted distinct process of rumor transmission for informational and sensational rumors, while showing that emotional arousal exerted a positive and direct influence on the likelihood of rumor transmission.

Additionally, moderating roles of individual differences depending on one's need for cognition (NFC) and need for sensation (NFS) in the relationship between message features of rumors and their effects were tested. Data showed no difference in the proposed process of rumor transmission depending on the levels of NFC and NFS.

The traditional communication theories, such as Gricean logic of conversation, posit that speakers are rational agents and contribute to conversation by saying information having adequate evidence (Grice, 1989). According to Gricean's Maxims of Conversation, speakers should not "say what [they] believe to be false" and "for which

[they] lack adequate evidence.” (Grice, 1989, p. 46). Similarly, rumor literature has documented that rumor believability is an important factor determining the likelihood of rumor transmission (DiFonzo & Bordia, 2002).

This utilitarian view of rumor transmission, however, fails to explain how highly implausible rumors spread through interpersonal communications. For example, McDonald’s was rumored to use red worm meat in its hamburger, consequently suffered a big decrease in sales (Tybout et al., 1981). When flights were delayed at Beijing Capital Airport, microblogs were abuzz over a rumor that a UFO had appeared at the airport, thus causing those delays (Jie, 2011).

This dissertation attempted to explain how rumors with low informational value but high sensational value such as the McDonald’s red worm use, and the UFO appearance in Beijing, spread, by explicating different motives of rumor transmission as a function of rumor’s informational and sensational values.

Further, by identifying individual-level psychological motives of rumor transmission, this dissertation fills research gaps in current rumor literature. Past research has identified a collection of variables related to rumor transmission, such as rumor believability. However, less studied is why these variables predict transmission.

Major findings of this dissertation can be summarized via four points. First, informational and sensational rumors led to the likelihood of rumor transmission through different mechanism. That is, when people receive plausible rumors, they are likely to share them with others to find out more information. In comparison, when people receive implausible but sensational rumors, emotional arousal induced by such rumors is a major drive of rumor transmission. Second, among the two utilitarian motives of rumor

transmission, the utilitarian motive for self, i.e., the fact-finding motive, is a rigorous and consistent driver of rumor transmission while the utilitarian motive for others, i.e., the information providing motive, is not. Third, no evidence was found that the hedonic motive of rumor transmission mediates the relationship between emotional arousal and the likelihood of rumor transmission. Emotional arousal has a direct and positive impact on the likelihood of rumor transmission. Last, informational rumors also are likely to spread by arousing emotions.

Transmission Process of Informational Rumors: Utilitarian Perspectives

Results show that informational rumors had a significant positive and direct effect on rumor believability but not on emotional arousal, implying that informational rumors appealed more to the cognitive responses of participants than to their emotional responses. Subsequently, rumor believability led to the utilitarian motive for self, i.e., fact-finding motive, and the utilitarian motive for others, i.e., information providing motive. However, only the fact-finding motive predicted the likelihood of rumor transmission, but the information-providing motive did not. This tendency was rigorous and consistent regardless participants' levels of need for cognition or need for sensation.

This result is consistent with previous studies showing that the higher the perceived believability of a rumor, the likelier it is to be shared with others (e.g., DiFonzo & Bordia, 2007; Kimmel & Audrain-Pontevia, 2010). For example, Rosnow, Yost, and Esposito (1986) found in a survey during a strike by university faculty that the number of rumors transmitted was correlated with respondents' belief in the truth of the rumors. A survey study conducted with communication-specialized consultants also reported that belief in rumors correlated with the frequency with which rumors are discussed (DiFonzo

& Bordia, 2002).

This dissertation corroborates these findings and further suggests the causal relationship between rumor believability and the likelihood of rumor transmission. By manipulating the informational value of rumors, this online experiment showed that a rumor having high informational value is more believed and more likely to be transmitted than a rumor having low informational value.

Moreover, this study's finding that the fact-finding motive is a major driver for the transmission of informational rumor, also is consistent with past theoretical arguments on psychological motivations of rumor transmission. Rumor literature documents that people generate and transmit rumors to satisfy the need for information in ambiguous or uncertain situations (Allport & Postman, 1947; Shibutani, 1966).

Nevertheless, this claim has not been tested empirically and extensively. Indirect evidence is that the fact-finding motive was highest when the rumor was negative about the ingroup and it was transmitted to ingroup members (DiFonzo & Bordia, 2007). The researchers argued that their results suggested a mediating role of the fact-finding motivation between the effect of rumor recipient and the likelihood of transmission (DiFonzo & Bordia, 2007).

This dissertation advances DiFonzo and Bordia's study (2007) on the role of the fact-finding motive. The results of this study found not only fact-finding motivations for rumor transmission, but also its relationship with rumor believability. Although speculative, it can be argued that believable rumors create uncertainty about an issue, thus motivate people to seek more information.

Future research is needed to examine the mediating role of uncertainty in the

relationship between rumor believability and the fact-finding motive. A primary assumption of rumor research has been that rumor is generated and shared to reduce uncertainty. Little attention has been given to the potential for rumor information to induce or increase uncertainty among rumor recipients. Information from mass media or interpersonal communication can be both a cause and consequence of uncertainty (Hurley, Kosenko, & Brashers, 2011; Jones, Denham, & Springston, 2007). It can be argued that rumors also have the properties or forms of uncertainty-related messages considering that they are unverified information. Thus, rumors may create uncertainty and motivate people to find more information regarding their truth value, in particular when they appear believable. Examining this relationship would serve as a useful and insightful extension of the current study with regard to the process of rumor transmission.

Relatedly, another interesting question this dissertation raises is how much belief is necessary for rumors to be transmitted. Rumor believability can be expressed as subjective probability of rumor veracity, ranging from 0 (false) to 1 (true), depending on rumor recipients' evaluation of the rumor's content. The nature of the relationship between rumor believability and the fact-finding motive may be linear, quadratic, or s-shaped. Future research is needed on this question.

Unlike the prediction of this research, however, the utilitarian motive for others, i.e., information providing motive, did not predict the likelihood of rumor transmission, although rumor believability correlated positively with the information-providing motive. In the context of rumor communication, this would mean that people are more careful about passing on, or reluctant to pass on, information to others even when they are motivated to do so. This would be true considering that spreading a rumor that might be

false involves social risk such as losing one's reputation as a reliable and trustworthy source (Kamins et al., 1997).

Taken together, this study's findings suggest that people are cautious about regarding rumor as reliable information, or to share it with others; rather they tend first to verify it. Although the precise meaning of these patterns is obviously not yet clear, the finding of this dissertation in terms of the roles of the fact-finding and information sharing motives deserves further, deliberate exploration.

Transmission Process of Sensational Rumors: Hedonic Perspectives

This study's findings do not support the hedonic motive of rumor transmission. Although sensational rumors induced emotional arousal, the path from emotional arousal to the hedonic motive of rumor transmission was not significant. In addition, the hedonic motive of rumor transmission was not related to the likelihood of rumor transmission.

The two non-significant paths, from emotional arousal to the hedonic motive of rumor transmission and from the hedonic motive of rumor transmission to the likelihood of rumor transmission, may be explained in several ways.

First, the relationship between emotional arousal and the hedonic motive might be quadratic. Much evidence exists that people prefer moderate degrees of arousal. Extremely high levels of arousal evoked by a stimulus lead to negative feelings and attitudes toward that stimulus (Berlyne, 1960; Mehrabian & Russell, 1974). Although there is less agreement on the effect of low levels of arousal on stimulus evaluation, it also is known that people prefer stimuli evoking moderate degrees of arousal, to stimuli evoking low levels of arousal (for reviews, Berlyne, 1978; Mehrabian and Russell, 1974). However, this notion cannot be applied to the current study's finding. A quadratic

regression analysis showed a non-significant curvilinear relationship between arousal and the hedonic motive.

The second explanation can be that the negative valence of rumors this study used might have hindered the hedonic motivations. Scholars posit that hedonic gratification results from emotional arousal from the experience of using products, regardless the valence of emotions, either positive or negative (Batra & Ahtola, 1990; Hirschman & Holbrook, 1982). For example, people watch horror movies or ride roller-coasters because these activities provide high emotional arousal through what might be considered a negative emotion, namely fear (Spangenberg, Voss, & Crowley, 1997).

Nevertheless, empirical studies on the hedonic motive have been limited to positive emotional experiences such as fun (e.g., Davis, 2010; Fiore, Jin, & Kim, 2005; Stoel, Wickliffe, & Lee, 2004). Thus, it remains unclear whether emotional arousal induced by negative stimuli also has the same hedonic value as emotional arousal induced by positive stimuli.

Recently, researchers investigated the role of emotions on consumer behavior including word-of-mouth, separating the two dimensions of emotions, i.e., emotional arousal and valence. Ladhari (2007) showed that both pleasure and arousal influence the likelihood of generating WOM, but arousal had a greater effect than did pleasure. It would be valuable to explore the differential impact of emotional valence and intensity in the rumor context.

The non-significant relationship between the hedonic motive of rumor transmission and the likelihood of rumor transmission may be attributed to conflicting effects of the two factors of the hedonic motive, namely the entertaining motive being

likely to *encourage* people to share rumors, but the social approval motive likely to *discourage* people from sharing rumors.

In addition, the negative relationship between the social approval motive and the likelihood of rumor transmission deserves more attention, given that previous studies have demonstrated it to be an important driver of information-sharing behavior (e.g., Hennig-Thurau, Gwinner, Walsh, & Gremler, 2004; Sundaram, Mitra, & Webster, 1998). Social approval motive is concerned with one's desire to create a positive image on others and to signal social status (Hennig-Thurau et al., 2004). Studies have shown that people strategically engage in WOM to signal their perceived expertise (Wojnicki & Godes, 2011). Similarly, people post information or opinion on their social network sites to earn respect from others (Park, Gu, Leung, & Konana, 2014).

In that rumor is unverified information, however, its sharing may differ from sharing of other types of information such as news or opinion. Although rumor spreaders may create an image they are information suppliers, equally possible is that they may lose their reputations as reliable information sources, especially if a rumor turns out to be false. Therefore, the social approval motive can demotivate people from sharing rumors that might be false. Further investigation of the social approval motive and its effects is warranted, to understand its potentially varied role in various types of information such as rumors and news.

Role of Emotional Arousal in the Rumor Transmission Process

Emotional arousal did not predict the hedonic motive of rumor transmission. However, emotional arousal directly impacted the likelihood of rumor transmission.

Emotional arousal was induced by sensational rumors directly and by informational rumors indirectly.

Prior work also showed that stories evoking emotions were likely to be passed along. Heath et al. (2001) suggested that emotion can surpass truth in sharing the stories. Berger and Milkman (2012) showed that news contents evoking high-arousal, regardless the valence of emotion, were more viral than contents evoking low arousal.

Although the process through which emotional arousal directly drives rumor transmission is not clear, several mechanisms may explain the role of emotional arousal. First, the experience of emotion facilitates action directly. Research has shown that emotional experiences activate motor areas of the brain (Bremner et al., 1999). Most recently, Hajcak et al. (2007) found that emotionally-arousing stimuli, whether of positive or negative valence, increase motor cortex excitability.

Secondly, the link between emotions and rumor sharing can be related to the phenomenon of “social sharing of emotions” (Rimé, Philippot, Boca, & Mesquita, 1992). It has been shown that emotional experiences are communicated among social partners such as parents or friends, no matter which type, and the intensity of emotions is positively correlated with social sharing (Rimé, Finkenauer, Luminet, Zech, & Phillipot, 1998).

Future research should elaborate on the findings reported in this dissertation, for example by testing whether emotional arousal, indeed, directly activates the behavior of rumor transmission, or whether there is a mediator other than the hedonic motive.

Moderating Roles of Individual Differences in the Rumor Transmission Process

The dual motive model of rumor transmission that this study tested held true regardless one's levels of need for cognition and need for sensation. To date, many published studies have suggested the role of need for cognition on attitudes formed as a result of message processing. For instance, people with high need for cognition enjoy thinking while those with low need for cognition tend to avoid effortful cognitive work (Cacioppo & Petty, 1982). Accordingly, it is expected that people with high need for cognition, compared to those with low need for cognition, would be more influenced by RIV. However, the current study's finding was inconsistent with prior studies (e.g., Haugtvedt, Petty, & Cacioppo, 1992; Martin, Sherrard, Wentzel, 2005). This result might be attributed to the current study's unique design: message stimuli were considerably short and contained a rumor, so that the cognitive effort required to process the message and to evaluate its quality was relatively low. Accordingly, even low-need-for-cognition participants might be motivated sufficiently to process the rumor statement and tell its believability.

Although there was no significant difference in terms of rumor transmission process between high and low sensation seekers, however, this study showed an expected pattern. The effect of sensational features of rumors on emotional arousal was stronger among people having high need for sensation than among those having low need for sensation. This tendency is consistent with prior studies showing that high-sensation seekers have higher levels of optimal arousal. For example, they prefer stimuli with high complexity such as asymmetrical visual designs or abstract paintings that heighten

arousal (Zuckerman, Bone, Neary, Mangelsdorf, & Brustman, 1972; Zuckerman, Ulrich, & McLaughlin, 1993).

Limitations and Future Research

Several limitations should be noted. First, there is a possibility of the confounding effect of the product type. Researchers have addressed that the effectiveness of persuasion is greater when utilitarian or hedonic-based persuasion matches the nature of products. For example, Chandon et al. (2000) suggested that monetary sales promotions such as price cut and free product were more effective for utilitarian products, while nonmonetary sales promotions such as free gift sweepstakes were more effective for hedonic products. Extending these empirical findings, it may be that the likelihood of rumor transmission is bigger when rumor types (i.e., RIV or RSV) match the utilitarian or hedonic nature of the object of the rumor.

This study selected *soda* as a test case due to its relevance to study participants and its high vulnerability to rumors. Soda products were perceived as primarily hedonic by 79% of participants of this study. Thus, it may have strengthened the impact of emotional arousal on the likelihood of transmission in this study. It would be valuable to replicate this research with a highly utilitarian product category. Such analysis would permit ascertaining whether the proposed model remains valid and whether the relative weights of the proposed paths vary.

Second, following O'Keefe's recommendation (2003) that manipulation check is not necessary when "message variations are defined in terms of intrinsic features," this study did not measure whether participants perceived a given rumor statement as informational or sensational. Rather the appropriateness (i.e., validity) of rumor stimuli

was evaluated only through an investigation of the presence of sensational or informational message features in the stimuli.

Relatedly, although this study created informational and sensational rumor statements using various message features possibly affecting believability and emotional arousal based on well-documented studies (e.g., Slattery & Hakanen, 1994; Tversky & Kahneman, 1982; Vrij, 2008), it is not clear what component of message features led to those outcomes. For instance, to manipulate rumor informational value, this study used a label of news (*vs.* rumor) and the inclusion (*vs.* exclusion) of message details. Unclear is whether the label alone, message details, or both, contributed to the rumor believability. Although not a main focus of this dissertation, in future studies it would be valuable to identify specific features of rumor messages, informational and sensational, linked to their perceived effects.

As O'Keefe (2003) pointed out, many communication studies have not systematically and theoretically explored the relationship between message features and elicited responses; yet they employ certain types of outcomes rather than intrinsic features of messages. Motivations to forward a viral message cannot be examined fully without also considering its content and its specific message features. Clearly, knowing the message features of rumor statements would help communication practitioners categorize the rumor type and customize rumor rebuttal strategies accordingly.

Furthermore, future research may find more variables affecting rumor believability and emotional arousal. For example, agreement with prior attitude, source credibility, repetition, and absence of rebuttal might be related to rumor believability.

Much work could be done to validate experimentally using these cues in rumor truth judgments and to derive the relative weight each cue is accorded.

Additionally, further research could examine the degree to which different media through which rumor is shared can influence rumor believability or other perceptions on the rumor. Twitter rumor used in this study may be least likely believable, considering general perceptions of credibility of Twitter information. Although Twitterati tweet about their daily activities and share relevant information (Java, Song, Finin, & Tseng, 2007), also much *misinformation* is spread via Twitter (Tanaka et al., 2012). In an experiment (Schmierbach & Oeldorf-Hirsch, 2012), a message presented on a newspaper Twitter feed page was perceived less credible than the same message posted on a newspaper Web site, and this tendency was also shown even among regular Twitterati.

The present study also showed that perceived credibility of tweets is related to rumor believability, emotional arousal, and the motives of rumor transmission. Although not a formal hypothesis here, more work is necessary for better understanding how attitude toward media channels through which rumor is transmitted influences the rumor transmission process. Hence, further investigation of rumor believability and its effects is warranted for understanding its potentially varied role in a number of different types of media channels.

The third limitation relates to a way of measuring the likelihood of rumor transmission. In this study, *likelihood of rumor transmission* was operationalized as the number of people with whom participants are likely to share a rumor statement. Participants were asked to list as many names as possible of those with whom they would like to share the rumor. Highly likely, this, is that participants listed only names of their

families and close friends. This way of measuring the likelihood of rumor transmission would have not included rumor spread through social networking sites or to strangers and acquaintances. Future research needs to cover a broad range of rumor transmission, employing various media channels and asking the likelihood of spreading to anyone.

Besides, rumor-recipient type should be considered. Depending on the closeness of rumor recipients, people may have differing motives for transmitting a rumor. For example, the hedonic motive, or at least social approval motive, may be strong when rumor is transmitted to a large audience with weak ties. In comparison, the utilitarian motive such as fact-finding may be strong when rumor is transmitted to an engaged and active audience with strong ties. Supporting these arguments, this study also showed that perceived credibility of tweets was correlated positively with the hedonic motive. However it did not correlate with the fact-finding motive. Future research is invited to examine whether different motives of rumor transmission involves depending on rumor-recipient types (e.g., tie strength).

Relatedly, several more interesting questions arise: how do rumor motivations operate overall? Although this study showed that rumor believability is an antecedent of the fact-finding motive, it was not an antecedent of the information-providing motive. Necessary is investigation of how each motivation relates to each antecedent suggested in rumor literature, such as uncertainty, anxiety, etc. In addition, it is necessary to examine in what situational circumstances each motivation generally operates.

A further limitation of this study is the cross-sectional measurement of outcome variables. Although the use of SEM enabled us to test a series of hypotheses developed on the basis of well-established theory, it is data-driven and cannot provide evidence

about causal relationships. Future research should verify the directions of key relationships in the model this study tested.

Contribution

This research contributes importantly to current understanding of rumor transmission phenomenon. Human communication has been conceptualized primarily as a social behavior driven by informational value (Grice, 1975). Likewise, rumor research has focused on the sense-making role of rumors. This utilitarian perspective prevailed in rumor research.

However, this study provides theoretical explanation as well as empirical evidence, which suggest that informational value is not always the determinant of rumor transmission behavior. By comparing information quality and sensational quality of rumor statements, this dissertation reveals that, as a driver of rumor transmission, sensational value of a rumor can be as important as its informational value.

This study's findings explain why not only plausible but also implausible rumors are shared. One of the contributions of this study is the addition of emotions to the traditional approaches in which the cognitive paradigm dominated. Findings suggest that implausible but sensational rumors spread by evoking emotions. This study also found that highly-arousing rumor statements could spread even when they do not activate the hedonic motive. This suggests that rumor transmission might be about more than goal-oriented behavior such as fact-finding or entertainment. The transmission of rumor, especially of a sensational one, may be driven by a transmitter's internal states rather than by motivation (Berger & Miller, 2012).

Also worthwhile would be to consider these findings beyond the context of

rumors. Just as certain characteristics of rumors may cause them to become viral, marketers may consider employing such characteristics in designing brand or marketing messages to render them successful in generating wide transmission of brand-related content through consumer networks. This study suggests that content evoking emotional arousal can be produced using a few emotion-laden words even in a short sentence. Marketers also will be able to develop marketing messages to involve consumers in transmission of product information.

Another notable contribution is this study's reframing of rumor transmission antecedents within a motivational framework. Although rumor generation and transmission long have been viewed as goal-directed behavior with the motivation of problem-solving (Shibutani, 1966), little research has examined the motives of rumor transmission. As claimed in rumor literature (e.g., DiFonzo & Bordia, 2007; Shibutani, 1966), the current study showed that the fact-finding motive is a rigorous and consistent driver of rumor transmission as far as informational rumors are concerned.

From a managerial viewpoint, this result has important implications for marketers and communication managers. Traditionally, strategies to dispel rumors were to provide accurate information or clarify details to reduce uncertainties (Kimmel et al., 2010) or to present consumers with compelling evidence contradicting the belief produced by a rumor (Tybout et al., 1981). However, the effectiveness of such strategies varies (Kimmel et al., 2010). The current study's findings suggest that such strategies succeed only when a rumor is informational and activates fact-finding motives.

On the other hand, such strategies might fail to dispel sensational rumors such as the McDonald's worm item. Contrary to the purpose of rumor rebuttal, refuting

sensational rumors might increase repeat of the rumor and might strengthen emotional arousal, thus worsening the situation. In such cases, strategies to adopt might be no refutation (Iyer & Debevec, 1991), reframing an object of rumor such that it can create positively valenced arousal (Tybout et al., 1981). Equally effective might be simply pointing out that the information is a rumor the truthfulness of which should be carefully examined. This can help people process the information cognitively and remind them that rumors lack credibility. Knowing different processing sets of informational and sensational rumors would be useful to select effective rebuttal strategies to alter or break the path from rumors to their effects such as believability or arousal.

Persuasion literature suggests that mere exposure to information is related positively to perceived believability of the information (Arkes, Boehm, & Xu, 1991). Further, when people communicate, they tend to omit their certainty or uncertainty about their beliefs in a rumor, so the rumor is perceived as factual as it spreads (Dubois et al., 2011). Therefore wide transmission of rumors, regardless their level of plausibility, may damage the product. It is important to break the rumor transmission process at an early stage.

The effective control of harmful rumors is of substantial practical relevance in a variety of domains, including public health, risk and crisis management, organizational communication, political campaigns and public relations. With the proposed model in the current study, it is possible to estimate the extent of rumor spread and its transmission process, depending on its message features. That is, the proposed model allows marketers to identify features of rumor statements and rumor-spreaders' possible motivations. Marketers and communication managers should customize their rumor-rebuttal strategies

depending on rumor characteristics.

Conclusion

This dissertation proposed an integrated model of rumor transmission. Findings suggest that informational rumors and sensational rumors spread through different routes. It seems that informational rumors activate the utilitarian motive for self to find more information. This relationship is mediated by rumor believability. In comparison, emotional arousal seems to play a large role in the transmission process of sensational rumors. More, perceived believability of information rumors relates to emotional arousal, leading to a second path of transmission.

By considering the role of emotional arousal and how psychological processes shape rumor transmission, this dissertation provides deeper insight into rumor transmission, including what becomes viral and why implausible rumors are transmitted.

APPENDICES

Appendix 1

Stimuli

Low Informational, Low Sensational

Sam Amick @sam_amick · 6h

RUMOR - I heard a rumor that people had diarrhea after drinking soda. It contained bacteria.

Expand

↩ Reply ↻ Retweet ★ Favorite ... More

High Informational, Low Sensational

Sam Amick @sam_amick · 6h

NEWS - E. Coli was found on 2.8% of soda fountains in MI. It causes fatigue, fever and diarrhea. bit.ly/YosMaG

Expand

↩ Reply ↻ Retweet ★ Favorite ... More

Low Informational, High Sensational

Sam Amick @sam_amick · 6h

RUMOR ALERT - Fecal bacteria breeding in soda. People had explosive diarrhea with blood after drinking soda. It contained dried rat feces.

Expand

↩ Reply ↻ Retweet ★ Favorite ... More

High Informational, High Sensational

Sam Amick @sam_amick · 6h

NEWS ALERT - E. Coli from dried rat feces was found on 38% of soda fountains in MI. It causes explosive diarrhea with blood. bit.ly/YosMaG

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Appendix 2

Table 9. Summary of the Preliminary Analysis

Dependent Measure	Items	<i>F</i> (1, 72)	<i>p</i>	Independent Variable		<i>M</i>	<i>SD</i>
Rumor Believability	untruthful/ truthful, not believable/ believable, not plausible/ plausible, and unrealistic/realistic ($\alpha = .92$)	9.04	.004	RIV	high	4.27	1.30
					low	3.33	1.37
		0.12	.73	RSV	high	3.70	1.56
					low	3.76	1.26
Emotional Arousal	relaxed/stimulated, calm/excited, sluggish/frenzied, dull/jittery, sleepy/wide-awake, and unaroused/aroused ($\alpha = .83$)	0.06	.80	RIV	high	3.96	0.63
					low	3.91	1.00
		4.85	.03	RSV	high	4.16	0.83
					low	3.68	0.83

Appendix 3

Measures

1. Perceived Rumor Believability

not truthful								truthful
not believable								believable
unrealistic								realistic
not plausible								plausible

2. Emotional Arousal

relaxed								stimulated
calm								excited
sluggish								frenzied
dull								jittery
sleepy								wide-awake
unaroused								aroused

3. Motives of Rumor Transmission

Imagining that you share the message you read, please indicate your level of agreement or disagreement with the following statements (1=strongly disagree, 7 = strongly agree).

I will be likely to share the message because...

- It will make me feel good.
- It is thrilling.
- I enjoy it.
- it is stimulating.
- it will create a pleasant mood in me.
- it is entertaining.
- it peps me up.
- it is fun.

- it is beneficial to others.
- I would like to see if other people know if the message is true or false.
- I would like to figure out whether or not the message is true or false.
- the information is useful to others.
- other people will respect me if I tell them the message.
- the information is important to others
- to get more information on the message.
- it is exciting to see what others say about the message.
- it improves my image.
- it improves other people's recognition of me.
- it helps me make friends with others.
- it builds up my reputation with others.

4. Likelihood of Rumor Transmission

Imagining that you share the message with people you know, please list as many of their names as possible in the space provided below. You may use their nicknames, first names, last names or both, if you like.

If you are not likely to share the information at all, please write the following statement in the space provided below: "I will not share the message at all because [please state the reason why you don't want to or cannot share the message]"

5. Need for Cognition (1=strongly disagree, 7 = strongly agree)

- I would prefer complex to simple problems.
- I like to have the responsibility of handling a situation that requires a lot of thinking.
- Thinking is not my idea of fun.*
- I would rather do something that requires little thought than something that is sure to challenge my thinking abilities.*
- I try to anticipate and avoid situations where there is likely a chance I will have to think in depth about something.*
- I find satisfaction in deliberating hard and for long hours.
- I only think as hard as I have to.*
- I prefer to think about small, daily projects rather than long-term ones.*
- I like tasks that require little thought once I've learned them.*
- The idea of relying on thought to make my way to the top appeals to me.
- I really enjoy a task that involves coming up with new solutions to problems.
- Learning new ways to think doesn't excite me very much.*
- I prefer my life to be filled with puzzles that I must solve.
- The notion of thinking abstractly is appealing to me.
- I would prefer a task that is intellectual, difficult, and important to one that is somewhat important but does not require much thought.
- I feel relief rather than satisfaction after completing a task that required a lot of mental effort.*
- It's enough for me that something gets the job done; I don't care how or why it

works.*

- I usually end up deliberating about issues even when they do not affect me personally.

6. Need for Sensation (1=strongly disagree, 7 = strongly agree)

- I would like to explore strange places.
- I would like to take off on a trip with no pre-planned routes or timetables.
- I get restless when I spend too much time at home.
- I prefer friends who are excitingly unpredictable.
- I like to do frightening things.
- I would like to try bungee jumping.
- I like wild parties.
- I would love to have new and exciting experiences, even if they are illegal.

7. Perceived importance of soda products

unimportant								important
of no concern								of concern to me
irrelevant								relevant
means nothing to me								means a lot to me

8. Attitude towards soda products

don't like								like
bad								good
not appealing								appealing
unfavorable								favorable

9. Attitude toward Tweet messages

unbelievable								believable
unconvincing								convincing
not credible								credible

* Reverse scoring is used on this item.

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