EFFECTS OF STIGMA, MESSAGE VALENCE AND VIRALITY, AND AUDIENCE CHARACTERISTICS ON THE PERSUASIVENESS OF ANTI-STIGMA MESSAGES VIA SOCIAL MEDIA

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ABSTRACT

A major obstacle to public health is social stigma toward people with mental illnesses. Research on social media-based stigma-mitigation interventions lags behind the medical community's acknowledgment of the seriousness of mental illness stigma. This dissertation examined the impact of social media-delivered anti-stigma messages about mental illness. In particular, the study investigated the impact of a message feature factor (message valence) and a social media interface cue (virality), as well as an individual factor (stigma-related audience segment) on participants' perceived message credibility, as well as attitude and behavioral intention.

Participants showed significantly more stigmatizing attitudes toward schizophrenia than toward depression. Built on Goffman's (1963) and Smith's (2012) taxonomy of audience categories, among the 265 participants used for this analysis, only three audience segments exist with regard to the stigma toward depression (stigmatized, active supporters, and passive supporters), whereas four audience segments exist with regard to the stigma toward schizophrenia (stigmatizers, stigmatized, active supporters, and passive supporters).

A series of hypotheses and research questions related to message valence and virality were proposed based on two classic dual-process theories of persuasion (i.e., the ELM and HSM) and a recent theory about online information processing and decision making (i.e., the MAIN model). Surprisingly, both message valence and virality had no significant effect on any of the dependent variables, nor on the interactions between them.

In addition, it was found that stigma-related audience segment is a significant predictor of post-exposure attitude toward mental illness. Active supporters had more favorable attitudes toward the message, rated the source/content of the message as more credible, and reported higher viral behavioral intentions (VBI) to like and share (both online/off-line) the message. Participants who read anti-stigma messages about depression reported higher intentions to "Share" the messages, and the correlations between message evaluation variables and viral behavioral intentions (VBIs) were always stronger for the stimulus about depression than for the stimulus about schizophrenia. Theoretical and practical implications, limitations, and suggestions for future research are discussed.

DEDICATION

This dissertation is dedicated to my parents, XUEYE BIE and JIALAN YU, and all my professors who have provided me with years of unconditional love and support.

LIST OF ABBREVIATIONS AND SYMBOLS

a	Cronbach's index of internal consistency
df	Degrees of freedom: number of values free to vary after certain restrictions have been placed on the data
η^2	Eta squared: the ratio of variance explained in the dependent variable by a predictor while controlling for other predictors
M	Mean: the sum of a set of measurements divided by the number of measurements in the set
N	Size of the data set
p	Probability associated with the occurrence under the null hypothesis of a value as extreme as or more extreme than the observed value
r	Pearson's correlation
SD	Standard Deviation
t	Computed value of *t*-test

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CHAPTER 1

INTRODUCTION

On April 2, 2013, an Australian model, actress, and TV presenter, Ruby Rose, wrote a long Facebook post to her followers about her mental illness on Facebook to her followers. It was the first time she talked about her "ugly old friend Mr. Depression" to the public. She admitted that, "I have had depression for more years than I can remember," and she also shared her journey battling the "Mr. Depression" during over the past years. This post soon attracted thousands of "Likes" and "Shares,", and a lot of people left comments to thank her for opening the conversation, creating awareness, and reducing the stigma of mental illness. Obviously, the rise of social media has changed the way people communicate about health-related topics, including the issue of mental illness.

Social media has both the power to perpetuate stigmas and the potential to diminish them. In order to better understand communication and intervention about mental illness stigma, empirical examination is needed to evaluate the impact of social media-delivered anti-stigma messages. Therefore, this study examined how audience characteristics, message valence, virality and stigma type affect persuasiveness of stigma-reducing information. Health researchers and professionals need to determine how educational anti-stigma messages in an online setting affects people's attitude change, perceptions of the message and behavioral intentions.

This chapter argues the importance of studying mental illness stigma, types of mental illness stigma, and previous intervention efforts to change mental illness stigma. Then this chapter concludes with the purpose, contributions, and overview of the dissertation.

Stigma

Stigma refers to a mark or an attribute that makes an individual discredited or rejected by society (Goffman, 1963), and health-related stigma is defined as social constructions that result in devaluation and discrimination toward people with stigmatized conditions (Link & Phelan, 2001). Health-related stigma has detrimental effects on both the clinical course and treatment outcome of particular health conditions, including mental illness, HIV/AIDS, sexually transmitted diseases (STDs), obesity, and disabilities, among others. Fundamental components of stigma include being labeled, negatively stereotyped, excluded, suffer from status loss, and discriminated against (Link & Phelan, 2001). Stigma is a condition-specific construct; in other words, some health topics appeared to be more stigmatized than others (Ben-Porath, 2002; Miller, Fellows, & Kizito, 2007; Smith, 2007b; Yoo & Jang, 2012).

Mental Illness Stigma

One of the most stigmatized health issues, in all societies and cultures, is mental illness (Ben-Porath, 2002; Corrigan & Penn, 1999). Mental health-related stigma refers to "invalidating and poorly justified knowledge structures that lead to discrimination" (Corrigan & Penn, 1999, p. 766). It include three main components: stereotypes, prejudice, and discrimination (Corrigan & Watson, 2002). Stereotypes about mental illness refer to collective beliefs that regard persons with mental illness as dangerous, homicidal, incapable, or weak. Prejudice is negative evaluations or judgments of those living with mental illness. Prejudicial attitudes arise from stereotypes, personal experience, and other sources. Discrimination is the behavioral outcome of prejudice, such as avoidance, distancing, and hostile behaviors (Corrigan & Watson, 2002). People not only have more stigmatizing attitudes toward individuals with mental disorders than

those who have physical illnesses, but also view persons who seek help for a mental health problem as particularly unstable (Ben-Porath, 2002).

Types of Mental Illness Stigma

Mental illness is an umbrella term that refers to a family of mental disorders such as depression, schizophrenia, anxiety disorders, bipolar disorder, and personality disorders, among others. Large-scale survey studies have suggested that people perceive various mental disorders very differently (Crisp, Gelder, Rix, Meltzer & Rowlands, 2000; Link, Phelan, Bresnahan, Stueve, & Pescosolido, 1999). Take two of the most diagnosed mental disorders, depression and schizophrenia, as an example. According to recent statistics (National Alliance for the Mentally Ill, 2013), depression is one of the most common mental illnesses, while schizophrenia, major depression, and bipolar disorder are the top three "serious mental illnesses." Approximately 14.8 million American adults live with major depression, and approximately 2.4 million American adults live with schizophrenia. Both depression and schizophrenia are affecting millions of American adults, but these two mental disorders are perceived very differently. A 1999 report by the United States Department of Health and Human Services documented that schizophrenia is more heavily stigmatized than other mental illnesses: Schizophrenia is regarded as more unpredictable, dangerous, and untreatable than depression.

Using survey data from 1,444 adults living in the U.S. in 1996, Link et al. (1999) found that 61% of respondents considered persons with schizophrenia as likely to be violent, while 33% considered persons with depression as likely to be violent. They also found that participants reported higher attitudinal social distance (as measured by the extent to which respondents would be willing to move next door, spend a social night, make friends, work with, or have the person

marry into the family) to a person with schizophrenia than a person with major depression (Link et al., 1999).

Another study of 1,737 adults in Britain (Crisp et al., 2000) found that, when answering questions in relation to schizophrenia, about 71% of respondents rated people with schizophrenia as dangerous to others, 77% rated them as unpredictable, and 51% rated them to "never recover"; in contrast, when answering questions in relation to depression, 23% of respondents rated people suffering from severe depression as "dangerous to others," about 56% rated them as unpredictable, and only 23% rated them to "never recover."

To date, only a few studies have directly addressed the role of stigma type on the effectiveness of stigma-reducing educational efforts. In an experimental setting, Boysen and Vogel (2008) compared the results of educational interventions to reduce stigma related to two mental disorders: schizophrenia and substance addiction. Based on previous research showing that substance addiction is considered to be more controllable in comparison to schizophrenia, researchers hypothesized that (a) preliminary attitudes toward schizophrenia would be perceived significantly more positively than attitudes toward addiction; (b) information about schizophrenia would be perceived as more persuasive than information about addiction; and (c) information about schizophrenia would trigger more perceived positive attitude change than information about addiction.

It was found that, on most items in the blame scale and social distance scale, people perceived schizophrenia more positively than addiction, except for the attitude about dating a person who formerly had schizophrenia/addiction. Moreover, controlling for preexisting attitudes, educational information about schizophrenia was perceived as more persuasive than information about addiction. The type of disorder did not affect the perceived attitude change.

Based on these results, Boysen and Vogel (2008) suggested that there should be other factors that influence attitude change, such as perceived severity or perceived social impact. They used the example of infectious viruses to illustrate their point: People may have completely different attitudes toward the highly contagious and deadly Ebola virus and the mildly contagious cold virus. They concluded that "perceptions of the dangerousness affect stigmatizing attitudes independently from attribution of responsibility" (p. 466).

Yet, as mentioned earlier, the biggest limitation of Boysen and Vogel's (2008) study is the measurement they used. The brief and simple measurements of preexisting attitudes and perceived attitude change undermined the validity of the results. A second limitation is that it was unable to measure the influence of one of the dimensions of stigma associated with mental illness stigma: perceived dangerousness. It has been widely held that a major stereotype about the mentally ill is their tendency toward violence (Corrigan et al., 2002; Link, Cullen, Frank, & Wozniak, 1987; Romer & Bock, 2008). Thus, a study that fails to take stigma type into consideration is incomplete and inaccurate.

Research on Mental Illness Stigma in Health Communication

Communication researchers have examined stigma associated with different physical conditions using descriptive method. Numerous studies have implied that media play a critical role in fostering the stigma of mental diseases. Among one of the first scholars to address health stigma in media research, Signorielli (1989) analyzed 1,215 programs and 3,616 major characters, finding that TV images of mental disorders and the mentally ill were generally negative and stigmatized. Television characters with mental illness were most likely to engage in violence, were most likely to be victimized, and were less likely to be employed. In an analysis of newspaper coverage of mental illness in three Central European countries, Nawková et al.

(2012) found that more than half of all articles contained stigma statements toward people with mental illness. A longitudinal comparative study also indicated that in terms of metaphorical usage of stigmatizing labels, there was no significant improvement in major US newspapers' reporting of schizophrenia from 2000 to 2010 (Vahabzadeh, Wittenauer, & Carr, 2011). More alarmingly, in children's television particularly during animated cartoons, references to mental illness were not only frequently found but also predominantly negative and stigmatizing. As a result, children are gradually being socialized to adult prejudices against mental illness (Wilson, Nairn, Coverdale, & Panapa, 2000). To sum up, the mediated images of mental illness are often inaccurate, distorted and exaggerated by portraying mental illness and the mentally ill as abnormal, unpredictable and dangerous (Klin & Lemish, 2008).

Media effect research has generally revealed negative effects of exposure to stigmatizing media messages. For example, Morgan and Jorm (2009) surveyed a random sample of 3746 Australian youth and found that, although only one third of participants could recall a news story about mental illness, the most common stories in their minds were those including stigma components such as crimes and violence. One typical story was that of a woman who drowned her children, but was not sentenced to prison because she had a mental problem. Another study examined the effects of direct-to-consumer advertising of an antidepressant, finding that participants exhibited greater increments in negative attitudes toward people with mental illness after viewing the advertisement (Corrigan, Kosyluk, Fokuo, & Park, 2014). Although the extent of stigma is affected by various factors such as gender (Anderson & Bresnahan, 2013; Evans-Lacko et al., 2013; Rimal & Creel, 2008), ethnicity (Evans-Lacko et al., 2013), religion (Miller, 2009), and cultural backgrounds (Miller, Fellows, & Kizito, 2007; Pittam & Gallois, 2000),

media's impact on stigmatizing attitudes was evident across gender, race (Pearl, Puhl, & Brownell, 2012) and age (Latner, Rosewell, & Simmonds et al., 2007).

In addition to the literature in on media studies on of stigma communication, some recent studies examined how health stigma can be communicated at interpersonal levels. Using an open -ended question survey, Anderson & and Bresnahan (2013) asked respondents to give a description of male and female bodies of various sizes and found that stigma-related components, including distinguishing people (e.g., "too much fat in his waist"), labeling (e.g., "saggy" or "doughy-looking"), linking to peril ("obesity is a health risk"), and assigning personal responsibility ("he should see a doctor"), were found in 46.5% of comments across all body shapes. Using data from 30 in-depth interviews, Tang and Bie (in press) noted that people may contribute to the creation and transfer of mental illness stigma through constructing and sharing narratives of mental illness.

The availability and accessibility of stigma-inducing messages from media and personal communication creates stereotypical attitudes toward certain health conditions (Pearl et al., 2012; Evans-Lacko et al., 2013). This causes a series of negative clinical, psychological, and social consequences. For mental health patients, social stigma not only negatively affects their job opportunities, self-esteem, courage to seek help, and quality of life, but also has negative impact on their social life (Corrigan, 1999, 2004; Link & Phelan, 2001; Rüsch, Angermeyer, & Corrigan, 2005). Another problem is self-stigma among those with disorders. This internalized stigma comprises stereotyping and prejudice against themselves (Corrigan & Watson, 2002), and can lead to loss of passion for life and work, reduced treatment use and continuance, and insufficient recovery process (Corrigan, 2004; Davidson, 2003; Link, Struening, Rahav, Phelan, & Nuttbrock, 1997; Rüsch, Angermeyer, & Corrigan, 2005; Sirey et al., 2001). More alarmingly,

stigma toward persons who are labeled as mentally ill is a sustained rather than a transient phenomenon; it continues to make their recovery difficult even when they have been improving their how they functioning (Link et al., 1997). Finally, stigmatization does not stop at the individuals who are or who have been mentally ill; it renders the individuals more susceptible to mistreatment from family, friends, and the community, and "marks those who are ill, their families across generations, institutions that provide treatment, psychotropic drugs, and mental health workers" (Sartorius, 2007, p. 810).

The harmful effects of stigma toward individuals with mental illness have urged researchers to challenge this stigma and improve quality of life quality. Education is one of the most useful approaches (Corrigan & Penn, 1999). Educational approaches refer to programs that promote accurate knowledge about mental disorders with the aid of public service announcements, books, posters, newspapers, movies, and/or other audio-visual materials. Well-designed anti-stigma media messages can achieve the desired attitude change (Corrigan & Penn, 1999).

Mediated Interventions to Change Mental Illness Stigma

Theoretical and empirical research on health-related stigma has gradually progressed from the definition, measurement and interpretation of stigma toward an emphasis on stigma-reducing strategies. A number of media campaigns or educational interventions with media elements have been launched in the United States and worldwide (Boysen & Vogel, 2008; Clement et al., 2013; Corrigan & Gelb, 2006; Corrigan, Powell, & Michaels, 2013; Salter & Byrne, 2000; Vaughan & Hansen, 2004). Extensive empirical studies have been conducted on the effectiveness of newspaper articles (Corrigan et al., 2013; Stuart, 2003), films (Ritterfeld &

Jin, 2006), documentaries (Penn, Chamberlin, & Mueser, 2003), and an educational computer program (Finkelstein, Lapshin & Wasserman, 2008).

These media interventions were found to be effective in generating positive attitudes and reducing prejudice, but researchers failed to find linear relationships between attitude change and behavior change. In a systematic review of previous media interventions for reducing mental illness stigma that covered 22 studies and 4,490 participants, Clement et al. (2013) analyzed prejudicial attitudes and discrimination behaviors as primary outcomes, and knowledge and reactions to the interventions as secondary outcomes. They defined prejudicial attitudes as "attitudes towards, stereotypes about, emotional reactions to, and desire for social distance from" people with mental problems (Clement et al., 2013, p. 6). Discrimination behaviors referred to self-reported or observed discriminatory behavior/intention toward people with mental illness, such as social avoidance. They reported that previous empirical research showed small-to-medium effect sizes for attitude change, moderate knowledge gain, and favorable attitudes toward the intervention, but no significant effect was found for discrimination behaviors.

A variety of factors affecting stigma communication and online persuasion have been explored in the literature, such as the message valence (e.g., positive vs. negative; Alhabash et al., 2013), message virality (e.g., numbers of Likes and Shares; Alhabash et al., 2013; Flanagin & Metzger, 2013; Fu & Sim, 2011), type of stigma (e.g., stigma of depression vs. stigma of schizophrenia; Boysen & Vogel, 2008) and audience characteristics (e.g., positive or negative preexisting attitudes; e.g., Boysen & Vogel, 2008).

Though substantial literature on mass media interventions for reducing mental health-related stigma is available, research that addressesd how communication technology can achieve this is limited. New communication technologies are believed to be useful in attaining extensive

reach, encouraging “small acts of engagement,” and promoting positive health behaviors (Abroms & Craig Lefebvre, 2009, p. 420; Hawn, 2009; Newbold & Campos, 2011). Yet, as social media is becoming an important source for health information and a valuable tool for public health education (Moorhead et al., 2013; Newbold & Campos, 2011), health professionals need to explore the potential of various communication channels if they want to maximize the well-being of people living with mental illness. Therefore, the scholarship must examine the potential effectiveness of social media in conveying anti-stigma messages.

A longitudinal study of a social media intervention on the attitudes of Canadian young people towards mental illness can be considered one of the first studies in this area (Livingston, Cianfrone, Korf-Uzan, & Coniglio, 2014; Livingston, Tugwell, Korf-Uzan, Cianfrone, & Coniglio, 2013). In the first phase of their study, Livingston and colleagues (2013) found that exposure to a brief social media campaign about depression significantly increased awareness and use of a youth-focused mental health website among 13–25-year-olds, but did not successfully change their attitudes toward mental health issues. In the second phase of their study, 1 year after the social media campaign, Livingston and colleagues (2014) found significant attitudinal changes among these youths and young adults toward mental health issues, but there was no difference in young people’s intention to engage in constructive behaviors related to mental health. This longitudinal study demonstrated both the effectiveness and limitations of social media-based anti-stigma interventions.

Purpose of the Dissertation

Although several studies have examined the effectiveness of intervention programs in reducing psychiatric stigma, limited research has examined how online content might affect attitudes toward, perceptions of, and intentions to spread messages. Scholars have argued that

existing social media-based studies are mainly exploratory and descriptive, and one of the main gaps in current health communication literature is to explore the full potential of social media for health behavior change (Abroms & Craig Lefebvre, 2009; Moorhead et al., 2013).

Thus, this study seeks to evaluate the impact of social media-delivered anti-stigma messages about mental illness by manipulating the message feature (message valence) and social media interface cues (virality), as well as the type of stigma (disorder type). People have the chance to choose different modes to process online health information in different situations, according to dual-processing models, namely the elaboration likelihood model (ELM; Petty & Cacioppo, 1981, 1986b) and the heuristic–systematic model (HSM; Chaiken, 1980; Chaiken, Liberman & Eagly, 1989), as well as a recent theory which that addresses the effects of cognitive heuristics in online persuasion, the MAIN model (Sundar, 2008). The findings may shed light on the ways in which audience characteristics, message valence, virality, and stigma type affect responses to the stigma-reducing information.

Significance of the Dissertation

The current study is novel in the following ways. First, answering the calls for research on the role of social media in promoting public health goals (Newbold & Campos, 2011; Schein, Wilson, & Keelen, 2010), this study explores the impact of audience variables as well as message features and interface cues of health messages on social media. The delivery of public health messages via social media is an emerging topic. Newbold and Campos (2011) suggested that it is too early to draw any universal conclusions about the efficacy of Internet-based health interventions, given the degree of diversity of research designs, outcome measures, and analytic methods exhibited in past studies. Moreover, due to the time lag between social media evolution and the research and publishing cycle (Schein et al., 2010), rare were have been the studies that

can could provide a comprehensive framework that to takes into account multiple factors that would potentially influence stigma-reducing efforts.

Second, it providesd further empirical evidence about Goffman's (1963) and Smith's (2012) taxonomy of audience categories. Goffman proposed that the public should be divided into three categories, namely "own" (the stigmatized), "normals" (the stigmatizers), and "wise" (the neutral). Smith argued that Goffman's "wise" (the neutral) category should be further divided into *active supporters* and *passive supporters*. The current study is one of the first studies to retest Smith's (2012) taxonomy in a mental illness context and to examine how audience characteristics influence affective and cognitive responses to anti-stigma messages. More importantly, it reveales what effects the audience characteristics may have on the persuasion process.

This study also investigates the effectiveness of anti-stigma messages on the stigma associated with different types of disorders. Mental illness stigma is a condition-specific construct. Different types of disorders may evoke different levels of stigma and may lead the public to have different reactions (Boysen & Vogel, 2008; Crisp et al., 2000; Link et al., 1999). Previous anti-stigma research has recommended that researchers examine which strategies work best with specific categories of mental illness stigma, an area that has long been ignored (Boysen & Vogel, 2008). The current study expands current knowledge of the role of disorder type in successful interventions. It focuses on depression and schizophrenia, given their different levels of perceived dangerousness and unpredictability among the general public (Crisp et al., 2000; Link et al., 1999).

Fourth, the present research looksed at the role of message valence in health education messages. Past health communication research in message valence has been contradictory. Some

asserted that negative tone is more effective (Biener, Ji, Gilpin, & Albers, 2004; Nan & Madden, 2012), while others argued that exposure to positive messages is more likely to exhibit attitude change or higher behavioral intentions (Alhabash et al., 2013; Gallagher & Updegraff, 2012; Rothman, Bartels, Wlaschin & Salovey, 2006).

In addition, this study adds to the body of anti-stigma research by introducing a social media-based behavioral variable: viral behavioral intentions (VBI; Alhabash et al., 2013; Alhabash & McAlister, 2014; Hu & Sundar, 2010; Lee & Sundar, 2013). Viral behavioral intentions refer to people's willingness to "Like" a message, to "Share" the message with online friends, and to share the information in the message with a friend in off-line settings. One of the key characteristics of social media is that it enables people to share content and opinions (Lariscy, Avery, Sweetser, & Howes, 2009; Lindsay, 2011). Thus, when studying the impact of a social media-based intervention, it is valuable to measure participants' viral behavioral intentions as indicators of affective response and support.

Finally, the results provide practical implications for health professionals and the design of interventions. As previous research on mental illness-related stigma reduction has largely been overgeneralized, less theoretically based and/or methodologically problematic (Harper, 2005), an expanded and nuanced examination of effective communicative strategies for specific audience segments would lead to better health outcomes and life quality for people living with mental illness.

Overview of the Dissertation

Chapter 2 reviews stigma-related literature, two classic dual-process theories of persuasion (i.e., the ELM and HSM), and a recent theory about online information processing and decision making (i.e., the MAIN model). Then Research questions and hypotheses are then

addressed. Chapter 3 outlines the research methods, stimuli development and measurements that were used. All the stimuli and questionnaires in the current study are enclosed in the Appendices. Chapter 4 presents findings from the experiment according to the results of each research question and hypothesis. Finally, the main findings of the study, theoretical and practical implications, limitations, suggestions for future research and final conclusions are presented in Chapter 5.

CHAPTER 2

LITERATURE REVIEW

This chapter first presents a discussion of stigma-related audience characteristics. Next it presents the literature on different types of mental illness stigma that were reviewed. It then explains the three persuasion models that were studied to build the hypotheses: the elaboration likelihood model (Petty & Cacioppo, 1981, 1986b), the Heuristic–Systematic Processing Model (HSM, Chaiken, 1980, 1987; Chaiken, Liberman, & Eagly, 1989), and the MAIN model (Sundar, 2008). These three models outline the different methods by which people process information and variables that influence the route to persuasion. Current research on the effects of one message-related factor (emotional valence) and one heuristic factor (virality) on social media-based persuasion are also discussed. This section concludes with research questions and hypotheses.

Audience Characteristics: Stigma-Related Categories and Involvement

Stigma. Goffman (1963) was the first scholar to define stigma as "the situation of the individual who is disqualified from full social acceptance" (p. 9). The past few years have witnessed several theoretical advances in our understanding of communicating stigma, including Smith's (2007a) stigma communication theory. Under the assumption that "stigmas are social constructions serving social functions" (p. 467), Smith (2007a) proposed the following components of stigma communication: "stigma communication includes specific content—marks, labels, responsibility, and peril—in order to induce affective and cognitive responses to

create stigma attitudes, to generate protective action tendencies, and to encourage the sharing of these messages with others" (p. 477).

Stigma-related categories. Goffman (1963) suggested that stigma contribute to the creation of us/them or ingroup/outgroup disparities in the social world, whereby those who uphold the stigma stand against "them," or those who are stigmatized. Goffman further proposed a three-category taxonomy of stigma-related categories of people: the "own," the "wise," and "normals." The "own" are ingroup members who possess socially stigmatized identities and are seen as deviants. The "normals" are outgroup members who do not have discrediting attributes, have little personal relevance to the "own," consider the "own" as abnormal, and enact the stigmatization to reduce their life chances. The "wise" people are also from the outgroup side but are more sympathetic and accepting of members of the "own."

Smith (2012) empirically tested Goffman's taxonomy of the "own," the "wise," and "normals." The results showed that the public can be categorized as four subgroups: *the stigmatized*, *stigmatizers*, *active supporters*, and *passive supporters*. *Stigmatized* people are characterized by personal relevance with the stigma, self-consciousness of being in a disadvantaged group, strong group identity, and shared feeling of being categorized. *Stigmatizers* are characterized by low personal relevance with the stigmatized group, beliefs that the stigmatized people should be treated differently, and discriminatory behaviors against the stigmatized group. *Active supporters* are one type of Goffman's "wise" people, who do not have discrediting attributes but oppose stigma and stigmatization; *passive supporters* are another type of the "wise," who do not support stigmatization but do not respond or resist to it. In other words, both Goffman (1963) and Smith (2012) categorized the audience into *stigmatizers*,

stigmatized and *supporters*, while Smith (2012) divided supporters into a more motivated subgroup (*active supporters*) and a less motivated subgroup (*passive supporters*).

The clarification of stigma-related audience segments has been neglected in health stigma research (Boysen & Vogel, 2008), but has important implications for designing effective anti-stigma messages. Resistance to stigma change is particularly strong among some individuals (Corrigan & Penn, 1999). More research into audience segments can help to answer the question of how persuadable are the individuals in the audience. Hence, the first research question of the current study is: How many audience segments exist with regard to the stigma toward depression and schizophrenia?

Audience characteristics and anti-stigma interventions. Using perceived persuasiveness of the educational information and perceived attitude change as outcome variables, Boysen and Vogel (2008) examined the effect of preexisting attitudes toward schizophrenia on anti-stigma interventions. They measured preexisting attitudes in two ways: a two-item scale of preexisting stigmatizing attitudes about blame (i.e., "Mental illness is a sign of weakness" and "Mental illness is the fault of the person who has the illness") and a two-item scale of social distance (i.e., "I would avoid living in a neighborhood with a mental illness treatment center" and "I would date someone who formerly had a mental illness") (p. 455). To measure perceived persuasiveness, researchers asked participants to rate four items related to blame (e.g., "How persuasive was the reading in showing that mental illness is [is not] a sign of weakness") and four items related to social distance (e.g., "How persuasive was the reading in showing that dating people who formerly had a mental illness is [is not] OK") (p. 455). To measure the perceived attitude change, participants answered the following question: "How

would you rate your current attitude about mental illness as a sign of weakness compared to your attitude at the start of this experiment?" (p. 456).

Boysen and Vogel (2008) found that preexisting stigmatizing attitudes are a determinant of perceived persuasiveness and perceived attitude change. Compared to individuals with preexisting negative attitudes, individuals with positive attitudes rated the intervention message as more persuasive and reported significantly more positive attitude change. They concluded that "preexisting attitudes can have profound effects on the integration of new information" (p. 465).

Boysen and Vogel's (2008) results can be understood by using Goffman's (1963) and Smith's (2012) taxonomy that those who are initially *stigmatizers* are less likely to reduce their stigmatizing attitudes through education than those who are initially supporters. However, the results of their study were limited by the brief and simple measurements of preexisting attitudes and the lack of post-exposure measures of attitudes. Only one self-report question on participants' perception of attitude change was used, which was inevitably influenced by perceptual bias. As many researchers have pointed out that current anti-stigma studies are largely methodologically flawed (Harper, 2005; Penn et al., 2003), Boysen and Vogel's (2008) study should be replicated with more accurate and detailed measurements of pre- and post- exposure attitude change.

Personal involvement and stigma communication. Smith and Hipper (2010) suggested that relatively little research has been conducted on the role of unlabeled individuals' concern in counteracting stigma, while it is crucial to understand what unlabeled individuals can do to support the stigmatized. In a survey study with hypothetical scenarios, Smith and Hipper's (2010) participants were asked to indicate whether they had a close friend/family member labeled as a member of a stigmatized group (i.e., one who had started smoking or was diagnosed

with a mental illness), how the public would view the stigmatized individual, and what advice they might give to the stigmatized individual. Participants were also asked to consider how relevant smoker/mental illness stereotypes might be for themselves, through questions like "I believe that some people may categorize me as a smoker." They found that greater personal relevance was positively correlated to confidants' greater advocacy of coping strategies to deal with stigmatization.

Using the elaboration likelihood model, Flora and Maibach (1990) examined the influence of cognitive involvement with the issue of AIDS on information processing and recall of AIDS information. A four-item measurement was used to evaluate participants' involvement with AIDS, including questions like "I think about STDs (sexually transmitted diseases) and AIDS a great deal" and "STDs and AIDS are personally relevant topics for me." Although they failed to find a main effect of AIDS involvement on message recall, they did find a significant interaction between message valence and AIDS involvement: Message valences significantly improved message recall among subjects at low levels of issue involvement.

Flora and Maibach (1990) concluded that issue involvement needs to be addressed as an important audience characteristic. But still very little research has focused on the role of involvement variable in designing anti-stigma messages. This study attempts to fill in this area that previous research has largely ignored.

Perceived public stigma as a potential influencing factor. Perceived public stigma (perceived social norm) is an important antecedent for stigma toward mental illness (Pinto-Foltz & Logsdon, 2008; Puhl, Schwartz, & Brownell, 2005). More research on perceived social norm would be particularly useful to understand people's health decisions and to design interventions

(Smith, Ferrara, & Witte, 2007).Therefore, perceived public stigma was included in this study as a potential covariate.

In the following, three persuasion theories are reviewed as theoretical frameworks to illustrate how message characteristics and interface cues affect communication outcomes.

Elaboration Likelihood Model

The elaboration likelihood model (ELM; Petty & Cacioppo, 1981, 1986b) has been one of the most recognized theories of persuasion and attitude change since its establishment in the 1980s. After reviewing and summarizing previous theories of persuasion psychology literature on attitude change, Petty and Cacioppo (1981) introduced the ELM as an integrated framework for studying persuasive message processing. They proposed two routes to persuasion: the central route and the peripheral route. Central processing occurs when the arguments of a message are carefully processed and evaluated. The peripheral route explains how persuasion can take place in the absence of extensive message-related thinking. Both routes can affect the processes of attitude formation.

Central route of persuasion. Central route to persuasion. The central route involves effortful cognitive processing of message arguments. Central cues refer to the issue-relevant information presented in a persuasive message, such as argument quality (strong or weak). This route of persuasion "views attitude change as resulting from a person's diligent consideration of information that s/he feels is central to the true merits of a particular attitudinal position" (Petty, Cacioppo, & Schumann, 1983, p. 135). In other words, a person integrates already-acquired knowledge and content of the new message to make a highly cognitive evaluation. In order to evaluate a message through this route, an information recipient must be both cognitively able and

motivated to process the argument. A recipient who has both the motivation and the ability tends to carefully scrutinize the message received (Petty & Caccioppo, 1986a, 1986b).

Peripheral route to persuasion. People's attitude formation and change can also be determined by factors irrelevant to the message content and argument strength. Peripheral cues are defined as "stimuli in the persuasion context that can affect attitudes without necessitating processing of the message arguments" (Petty & Cacioppo, 1986a, p. 18). Under the peripheral route, people rely on issue-irrelevant message cues, such as individual and situational factors, to make quick and effortless judgments, rather than on thoughtful consideration of arguments central to the issue.

Elaboration likelihood continuum. A key construct of the ELM is the elaboration likelihood continuum, which indicates the possibility that issue-relevant information might be carefully processed (Petty & Cacioppo, 1986b). When people have more ability and motivation to engage in thoughtful consideration of issue-related arguments of a message, the elaboration likelihood is considered as high and the chance to follow the central route is increased. Conversely, when the elaboration likelihood is low, people tend to follow the peripheral route and use less cognitively demanding cues to filter a message rather than to utilize effortful, in-depth cognitive consideration. Thus, there is "a continuum of message elaboration ranging from none to complete" (Petty & Cacioppo, 1986b, p. 131) and belief changes can take place at different points along this elaboration continuum.

Role of involvement. As previously discussed, elaboration likelihood is mainly affected by motivation and ability. Motivation to process the message, however, is mainly affected by factors including issue involvement (or personal relevance) and need for cognition, among others. In particular, the level of involvement is positively associated with the likelihood of

engaging in central processing (Petty, Cacioppo, & Goldman, 1981). For example, Petty and Cacioppo (1984) found that in word-of-mouth situations, low involvement resulted in greater reliance upon peripheral cues to evaluate word-of-mouth sources.

Persuasion power. According to the ELM, beliefs that change via the central route are more accessible, more persistent over time, more resistant to counterpersuasive information, and more predictive of future behaviors than beliefs changed via the peripheral route (Petty & Cacioppo, 1986a; Petty & Priester, 1994). As cognitive elaboration increases, central cues have stronger effects on resultant attitudes, and the peripheral effects of cues become weaker. As elaboration decreases, peripheral cues may have a more powerful impact on influencing persuasive outcomes (Petty & Cacioppo, 1986a, 1986b).

Summary. The ELM has been widely used in advertising (e.g., Andrews & Shimp, 1990; Cacioppo & Petty, 1983), management (e.g., Douglas et al., 2008; Tam & Ho, 2005) and health communication research (e.g., Emmons et al., 2004; Igartua, Cheng, & Lopes, 2003). It has been applied to understand the persuasive communication process in a wide variety of media platforms and message types, suggesting that elaboration may be a key mechanism for understanding audience response to health information.

Heuristic Systematic Model of Information Processing

Another information processing theory worth mentioning is the heuristic-systematic model (HSM) (Chaiken, 1980; Chaiken et al., 1989; Eagly & Chaiken, 1993). The primary assumption made by HSM theorists was that people's goal of information processing is to evaluate the validity of the message. Similar to the ELM, the HSM suggests two concurrent modes of information processing: (a) systematic processing, whereby argument in messages are

thoroughly analyzed with prior knowledge; and (b) heuristic processing, in which cognitively less effortful judgmental rules are utilized to reach a conclusion.

Systematic processing. Systematic processing consists of intensive cognitive processing of the strength and validity of the arguments. It is a "comprehensive, analytic orientation in which perceivers assess and scrutinize all informational input for its relevance and importance to their judgment task, and integrate all useful information in forming their judgments" (Chaiken et al., p.212). In other words, this process is characterized by the attention given to message characteristics rather than context information. Moreover, intrinsic motivation (e.g., personal relevance) and ability to process (e.g., learned knowledge structure and comprehension ability) are necessary requisites to foster people to engage in the more effortful systematic mode of processing: The more motivation and ability an individual have, the harder the individual will work to think carefully about the points made in an argument. On the other hand, a person's motivation and ability to process information systematically are determined by individual differences and situational factors, such as lack of time or lack of issue-related expertise (Chaiken, 1980; Chaiken et al., 1989; Eagly & Chaiken, 1993).

Heuristic processing. The heuristic processing of social information is characterized by the use of one's existing knowledge and belief structure related to the persuasion context—such as consensus opinions (i.e., other peoples' opinions about a message)—to come to a decision (Chaiken et al., 1989; Chaiken & Maheswaran, 1994). To activate the heuristic processing mode, a persuasion message may be explicitly labeled as having received endorsements from a lot of people (the consensus heuristic).

As the HSM conceives the use of heuristics as more limited, relatively less effortful, and less demanding in terms of capacity, some may mistakenly think that systematic processing is

more careful and rational while heuristic processing tends to be inaccurate and irrational. According to Chaiken et al. (1989), systematic processing can be biased by the presence of motivational factors (e.g., irrational motivational goals) and individual cognitive characteristics (e.g., the knowledge and beliefs that are accessible for interpreting the persuasion message), while processing with the aid of heuristic cues can be particularly useful in certain situations (e.g., lacking time or ability) to save time and processing energy.

Summary. The heuristic–systematic model of persuasion is similar in many ways to the elaboration likelihood model. Both models distinguish between a process that requires considerable cognitive effort and a process that is guided by simple decision rules. Both systematic processing (HSM) and the central route (ELM) involve making judgments based on integrating the arguments' strength and prior knowledge, while heuristic processing (HSM) and the peripheral route (ELM) refer to using message-irrelevant elaboration to draw conclusions without thoughtful consideration of arguments central to the issue.

Moreover, both models propose that motivation and ability are determining factors of which processing style will be taken. Specifically, if heuristics are not available or accessible in the persuasion context, then cognitive elaboration occurs; when motivation and ability to process are both high, cognitive elaboration is more likely to occur; when heuristics or issue-irrelevant message cues are available and either motivation or ability are lacking, heuristic processing, which is less time consuming and effortful, can take place in the absence of message-related thinking. As motivation or ability decreases, the perceiver is less likely to carefully think and evaluate the arguments, and the role of issue-relevant information, such as message quality or argument quality, becomes less significant in persuasion (Chaiken et. al., 1989; Petty & Caccioppo, 1986a, 1986b; Eagly & Chaiken, 1993).

Implications of the ELM and HSM. There are three key implications of the two above-mentioned persuasion models. First, various message cues can contribute to attitude formation and change. Consensus opinions are one of the most frequently identified factors that influence persuasive outcomes. A second implication is that persuasive messages may produce different outcomes among different perceivers. Information recipients' outcome-relevant motivation, prior knowledge and experience and comprehension ability also influence which route to persuasion is likely to occur. Last but not least, careful consideration and elaboration result in more stable and reliable attitude change, while attitudes formed by heuristic cues are less persistent, resistant, and predictive of behavior. The fundamentals of these two dual-processing models can potentially be applied to address social persuasion using new media platforms.

The MAIN Model

Sundar (2008) presented the MAIN model to theorize four classes of technological affordances—modality (M), agency (A), interactivity (I), and navigability (N) of interfaces—that can be used as referential signals in making quality judgments of online information, where an affordance is defined as a "particular capability possessed by the medium to facilitate a certain action … suggestive and perceived by the user" (pp. 78–79). This model's main contention holds that because of the uncertainty, complexity, and information overload in the web universe, web users tend to rely on these affordances, which can trigger heuristics and activate heuristic cognitive processing, to make judgments and choices.

Modality affordance. The definition of modality affordance is highly medium-specific, as it is mostly structure-based rather than content-based and also the most visible at the interface. Heuristics that can be triggered by particular modalities include the realism heuristic (e.g., creating a sense of the real world), the old-media heuristic (e.g., designing a website that mimics

the layout of newspapers to invoke a feeling of trustworthiness), the distraction heuristic (e.g., using a sensory experience to represent or to create a sense of credibility), and the coolness heuristic (e.g., utilizing the coolness and innovativeness of a digital product to lead users to believe that the content must be credible), among others.

Agency affordance. The agency affordance of digital media mainly refers to the source of information; for example, from the device (e.g., computer or television) to the website address (e.g., a popular news website or an unknown website), or from collective intelligence of a massive number of web users (e.g., online polls or an online wiki) to one's personal web space (e.g., a personal webpage or blog).

When discussing agency affordance, the MAIN model introduced the bandwagon heuristic which is especially useful in studying the effects of social media persuasion. Given the vast information overload and increased uncertainty on the Internet, web users tend to rely on referential mental shortcuts to evaluate their online media experiences, such as system-garnered statistics about the amount of attention or support a web page has received from visitors (Flanagin & Metzger, 2008; Metzger et al., 2010; Sundar, 2008). According to Sundar (2008), the bandwagon heuristic is triggered by counts of views, downloads, likes, or high ratings from others. This heuristic is appealing because automated popularity indications can potentially be translated into quality impressions.

The bandwagon heuristic logic corresponds to the "consensus heuristic" (Chaiken, 1987) in the HSM, which asserts that social endorsements from a lot of people lead to increased perceived credibility and usefulness. Since all the major social media platforms provide evaluation metrics, many studies have explored the persuasive effect of agency affordance and found that bandwagon cues can be important determinants of attitudes and judgments about

social media messages in various contexts, such as health messages on Twitter (Lee & Sundar, 2013), anti-bullying messages on Facebook (Alhabash et al., 2013), and an online news story about cancer prevention with social media buttons (Stavrositu & Kim, 2014).

Interactivity affordance. The interactivity affordance is the most distinctive feature of digital media compared to traditional media. Through applications such as e-mail, instant messaging, live chat windows and social networking site buttons, the interactivity affordance conveys cues related to both interaction and activity, including responsiveness, choice, control, real-time telepresence, contingency, and own-ness.

Navigability affordance. Finally, the navigability affordance refers to hyperlinks, buttons and applications on the interface, which provide heuristic cues for users to make a quick judgment of website credibility. Navigability has the dual ability to trigger or transmit cues: First, websites with high navigability (e.g., well-organized and easy to follow) are associated with higher levels of perceived credibility from users; second, the words appearing in hyperlinks can trigger another heuristic, which the user may depend on to form judgments about content of the site.

Summary. The MAIN model (Sundar, 2008) outlines how quality judgments of the online information are made via peripheral processing of particular interface cues. It proposes four affordances that facilitate users in making assessments without laboriously processing the contents of online messages. When any of these affordances are available, people are tempted to use them as mental shortcuts that reduce cognitive load during information processing. Depending on which cues are made salient in the interaction context, different heuristics will be activated (Sundar, 2008). These heuristics can even influence judgments more strongly than the central argument of the message, depending on the strength of such a heuristic and the degree to

which the interface cue is processed. When content-related comprehension is low, people are likely to rely on heuristic strategies rather than content features in forming their attitudes, but when comprehension and motivation levels are higher, the impact of referential signals will be limited.

Applying Dual-Process Persuasion Models to Social Media

Valence. Emotional content is conceptualized as "the intensity and direction of the emotional content in the message" (Lang & Yegiyan, 2008, p. 433). Emotional components of a message influence the affective experiences of a message recipient. Emotion consists of two main dimensions: valence and arousal. Valence of emotional content refers to a continuum of the affective directions that varies from positive, to neutral, to negative. Arousal refers to the activation level of a recipient's affective experience, ranging from calmness to excitement.

The impact of different emotional valences in health communication has been acknowledged by many studies (e.g., Biener et al., 2004; Flora & Maibach, 1990; Lang, 2006b). Using memory as an outcome measure, Flora & Maibach (1990) found that emotional AIDS messages were more likely to be recalled and triggered greater desire to seek further information about AIDS. Positive emotions can be delivered through messages that emphasize the benefits of adopting a recommended behavior, while negative emotions can be delivered through messages that emphasize the consequences of not performing the recommended behavior. A substantial body of media psychology literature shows that negative claims are more effective (Lang, 2006b). In a study that compared the effects of anti-smoking advertisements delivering positive emotions (e.g., humor or fun), negative emotions (e.g., fear or sadness), and emotion-free messages among youth 12 to 15 years old, Biener et al. (2004) echoed that anti-tobacco ads

featuring negative health consequences were rated as more effective than positive ads or nonemotional ads.

In a Facebook setting, Alhabash et al. (2013) empirically extended the scope of previous research with the finding that different emotional tones in anti-cyberbullying social media messages lead to different cognitive and emotional outcomes. Using status updates from a fictitious nonprofit organization called sayNOto Cyberbullying, they manipulated emotional tone at three levels: positive, negative, and coactive. All other things being equal, the following statements were used in the three conditions: "The world is a happier place without cyberbullying" (positive), "The world is a nasty place with cyberbullying" (negative), and "It's so miserable to use Facebook when you know your friends are bullies" (coactive). Results showed that compared to coactive and negative status updates, positive updates received more favorable ratings, led to stronger anti-cyberbullying attitudes, and resulted in higher behavioral intentions to interact with the message (i.e., to like, share, and comment on the message, and to recommend it to others). These findings supported the existing evidence that valence is an important variable in packaging persuasive messages.

This stream of research is also consistent with the theoretical perspective of gain- and loss-framing effect (Rothman, Martino, Bedell, Detweiler, & Salovey, 1999; Rothman et al., 2006). Goffman's (1974) framing theory states that the manner in which an issue is presented largely determines how people perceive the social world and how they form related judgments. According to the definition of Rothman et al. (2006), "gain-framed statements can refer to both good things that will happen and the bad things that will not happen, whereas loss-framed statements can refer to bad things that will happen and good things that will not happen" (p.

S203). Past research has demonstrated the validity and usefulness of this approach in understanding health communication strategies and decision making (Rothman et al., 2006).

In an online context, Nan and Madden (2012) examined the effects of negatively versus positively framed blog posts about the human papillomavirus (HPV) vaccine on vaccine-related risk perceptions, attitudes toward HPV vaccination, and intentions to receive an HPV vaccination. Participants were assigned to one of three experimental conditions: the positive blog group in which participants read a blog emphasizing the effectiveness and safety of the vaccine; the negative blog group, which said that the vaccine is not effective and is potentially dangerous, and a control group in which participants proceeded to answer the outcome questions directly without reading any blogs. They found that, compared to the control group, exposure to the positive blog did not significantly alter vaccine-related risk perceptions, attitudes, or intentions, while exposure to the negative blog resulted in significantly more negative beliefs about vaccine safety, less favorable attitudes toward the HPV vaccine, and reduced intentions to receive free HPV vaccination. In sum, negative framing was more powerful than positive framing in changing attitudes with regard to online health information about the HPV vaccine.

In a meta-analysis of gain- and loss-framing effects, which covered 94 studies and 189 effect sizes, Gallagher and Updegraff (2012) reported that when examining prevention behaviors (e.g., participating in physical activity) as outcomes, gain-framed messages were shown to be more effective than loss-framed messages at promoting prevention behaviors. This finding somewhat coincides with Alhabash et al.'s (2013) results showing that positively framed messages were more accepted and generated higher intentions to share anti-cyberbullying messages on Facebook. In another review, Rothman et al. (2006) concluded that, generally speaking, gain-framed messages should be more effective when promoting behaviors that serve

an illness prevention function (e.g., using sunscreen to prevent skin cancer), and loss-framed messages should be more effective when promoting behaviors that serve an illness detection function (e.g., getting a mammogram). Moreover, this pattern of findings has been consistent among different populations and across different kinds of health behaviors.

In sum, past empirical research has revealed mixed results regarding the effects of different valences in health communication. Moreover, Rothman et al. (2006) pointed out that only a relatively limited number of health behaviors had been tested so far, and future applications could explore the effects of gain- versus loss-framed messages about changing unhealthy behaviors, such as anti-drug use messages. Gallagher and Updegraff (2012) concluded that the way to frame a health message may still be an important consideration in future behavior change interventions.

Virality. Recent work has begun to examine the importance of *virality* (the term used by Alhabash & McAlister, 2014), or the *bandwagon heuristic* (the term used by Sundar, 2008), or *popularity cues* (the term used by Fu & Sim, 2011), or *social media metrics* (the term used by Neiger et al, 2012; Peters, Chen, Kaplan, Ognibeni, & Pauwels, 2013; Stavrositu & Kim, 2014) in social media persuasion outcomes by examining how varying levels of other users' engagement influence individuals' information judgment. According to the MAIN model, virality metrics are one type of affordance that indicates where other people allocate their attention and how the online content is experienced, and can be used as a heuristic in making judgments (Hermida, Fletcher, Korell, & Logan, 2012; Sundar, 2008). According to the ELM and HSM models, information users need surrounding cues as decision aids to reduce their uncertainty (Chaiken et al., 1989; Petty, Cacioppo, & Schumann, 1983; Petty & Cacioppo, 1984).

The virality cues associated with social networking applications such as Facebook and Twitter generally relate to the frequency of Likes, Shares/Retweets and Comments. As Neiger et al (2012) argued, the virality heuristics provide an initial indication of users' involvement: "Like" is an indicator of low engagement that shows "the number of people who acknowledge agreement or preference for content," while "Share," "Retweet," and "Comment" indicate a medium level of engagement as these behaviors show "the number of people who participate in creating, sharing, and using content and the degree to which they influence others" (p. 163). High levels of engagement are demonstrated when people "engage in off-line events (which may be in addition to continued online activity) as a consumer or as a program partner, volunteer, or sponsor," such as participating in off-line advocacy events, registering for services, or making appointments with professionals (Neiger et al., 2012, p. 163).

(a) viral reach, which refers to the volume of message viewing, sharing, and forwarding; (b) affective evaluation, which refers to both positive and negative responses expressed by Internet users, such as choosing "Like" on a Facebook post, selecting "Like" or "Dislike" for a YouTube video, or clicking "Favorite" for a tweet on Twitter; and (c) message deliberation, which refers to the volume and valence of comments under online messages. Taken together, Alhabash and McAlister's (2014) definitions focus more on online activities rather than both online and off-line reactions.

High virality statistics can lead to "greater user traffic and participation" (Stavrositu & Sundar, 2012, p. 383) while allowing users to choose the peripheral route and process the information with less effort. Gerlitz and Helmond (2013), who coined the term "Like economy", pointed out that these so-called "social buttons" are "facilitating a web of positive sentiment in which users are constantly prompted to like, enjoy, recommend and buy" rather than

encouraging users to think critically or to spread negative opinions. Stavrositu and Kim (2014) suggested that virality metrics have a possible influence on perceptions of the relative desirability of a message: When virality is high, perceived endorsement of other users will be positively associated with higher perceived impact and increased desirability of message content.

Alhabash et al. (2013) investigated the role of emotional appeal (message valence), and viral reach (low vs. high) displayed alongside anti-cyberbullying status updates on Facebook in shaping users' attitudes toward messages, anti-cyberbullying attitudes, and viral behavioral intentions (VBI). They found that regardless of valence, low virality status updates (low shares) resulted in more favorable attitudes toward the message than highly viral status updates (high shares). High virality conditions led to stronger anti-cyberbullying attitudes than low virality conditions, yet VBI were not affected. A significant interaction between emotional appeal and virality was also found: Highly viral positive-toned messages resulted in the strongest anti-cyberbullying attitudes. Alhabash et al. (2013) suggested that, although it is practically difficult for communicators and marketers to control online followers' reactions, monitoring user activities and the information flow is essential in evaluating and enhancing the quality of conversation.

Research Questions and Hypotheses

Based on previous research, the current study hopes to explore how social media messages about mental illness stigma might influence attitudes toward mental illness, attitudes toward and evaluations of the message, and intentions to spread the message. First, built on Goffman's (1963) and Smith's (2012) taxonomy of audience categories, the current study's first set of research questions is proposed below:

RQ1a: How many audience segments exist with regard to the stigma toward depression?

RQ1b: How many audience segments exist with regard to the stigma toward schizophrenia?

The study is also interested in how different types of mental illness stigma might affect the communication outcome of anti-stigma messages. It is hypothesized that people consider schizophrenia as more dangerous and more fearful, and are more willing to offer help to individuals with depression than those with schizophrenia.

H1: Preexisting attitudes toward depression would be significantly more positive than preexisting attitudes toward schizophrenia.

Based on finding from RQ1 and H1, the next set of research questions sought to determine whether there were differences among audience segments with regard to attitude toward, perceptions of, and intentions to spread the message.

RQ2: How do the audience segments influence

(a) attitudes toward the message;

(b) perception of source credibility;

(c) perception of message credibility;

(d) viral behavioral intentions (VBI) to “Like” the message;

(e) viral behavioral intentions (VBI) to “Share” the message;

(f) viral behavioral intentions (VBI) to share the message with others through off-line interactions?

Given that audience characteristics are found to be a determinant of perceived attitude change in anti-stigma interventions (Boysen & Vogel, 2008), the next research question was concerned with the relationship between audience segment and posttest attitude:

RQ3a: How do posttest attitude toward people with depression differ by audience segments?

RQ3b: How do posttest attitude toward people with schizophrenia differ by audience segments?

After exposure to the message, given previous findings that people view depression as less threatening, less dangerous and more curable, it is also proposed that:

H2: Compared to participants exposed to stigma-reducing messages about schizophrenia, participants exposed to stigma-reducing messages about depression will

(a) have more favorable attitudes toward the message;

(b) rate the source of the message as more credible;

(c) rate the message content as more credible;

(d) report higher viral behavioral intentions (VBI) to "Like" the message;

(e) report higher viral behavioral intentions (VBI) to "Share" the message;

(f) report higher viral behavioral intentions (VBI) to share the message with others through off-line interactions.

Based on the mixed results of previous research on the message valence in health communication (Alhabash et al., 2013; Biener et al., 2004; Gallagher & Updegraff, 2012; Nan & Madden, 2012; Rothman et al., 2006), this study predicts that positive-toned messages will be more powerful in generating favorable attitudes, perceptions, and desired intentions. The next set of hypotheses expects that:

H3: Compared to participants exposed to negative-toned messages, participants exposed to positive-toned messages will

(a) have more favorable attitudes toward the message;

(b) rate the source of the message as more credible;

(c) rate the message content as more credible;

(d) report higher viral behavioral intentions (VBI) to “Like” the message;

(e) report higher viral behavioral intentions (VBI) to “Share” the message;

(f) report higher viral behavioral intentions (VBI) to share the message with others through off-line interactions.

Given the scarcity of prior empirical studies on the impact of the message virality and persuasion, the following hypotheses were developed based on the findings from Alhabash et al. (2013) as well as the role of the consensus/bandwagon heuristic in the ELM, HSM and MAIN models:

H4: Compared to participants exposed to low virality messages, participants exposed to high virality messages will

(a) have more favorable attitudes toward the message;

(b) rate the source of the message as more credible;

(c) rate the message content as more credible;

(d) report higher viral behavioral intentions (VBI) to “Like” the message;

(e) report higher viral behavioral intentions (VBI) to “Share” the message;

(f) report higher viral behavioral intentions (VBI) to share the message with others through off-line interactions.

The next two hypotheses were developed to examine the main effect of message valence and virality on posttest attitude.

H5a: Participants exposed to positive-toned messages will show more favorable posttest attitude.

H5b: Participants exposed to high virality messages will show more favorable posttest attitude.

The next set of research questions was formulated to ask about the effects of interactions among three categorical variables: audience segment, valence, and virality:

RQ4: How will the interactions among audience segment, valence, and virality, affect

(a) attitudes toward the message;

(b) perception of source credibility;

(c) perception of message credibility;

(d) viral behavioral intentions (VBI) to “Like” the message;

(e) viral behavioral intentions (VBI) to “Share” the message;

(f) viral behavioral intentions (VBI) to share the message with others through off-line interactions?

Finally, relationships among dependent variables were analyzed. Specifically, the researcher was interested in the relationships between message evaluation variables (attitudes toward the message, perception of source credibility, and perception of message credibility) and viral behavioral intentions (VBI).

H6: There will be a positive correlation between

(a) attitudes toward the message and viral behavioral intentions (VBI);

(b) perception of source credibility and viral behavioral intentions (VBI);

(c) perception of message credibility and viral behavioral intentions (VBI).

CHAPTER 3

METHODOLOGY

Social media users' responses to anti-stigma messages were assessed by an experiment, in which a fictitious Facebook status update was viewed by participants. This chapter is organized as follows: First, the experiment design and participant recruitment are discussed. Next, the stimuli development, the procedure, and the measures used are addressed. Finally, the statistical treatment of the study is described.

Experimental Design

The study used a 2 x 2 x 2 between-subjects experimental design to address the research questions. In particular, the three independent variables were valence of a Facebook status update (positive vs. negative), message virality (high vs. low), and type of stigma (stigma of depression vs. stigma of schizophrenia). Eight conditions were produced (see Table 3.1).

Table 3.1 Experimental Design

Condition	Content
1	one **positive** Facebook update about stigma of **depression** with **high** likes, comments, and shares
2	one **negative** Facebook update about stigma of **depression** with **high** likes, comments, and shares
3	one **positive** Facebook update about stigma of **depression** with **low** likes, comments, and shares
4	one **negative** Facebook update about stigma of **depression** with **low** likes, comments, and shares
5	one **positive** Facebook update about stigma of **schizophrenia** with **high** likes, comments, and shares
6	one **negative** Facebook update about stigma of **schizophrenia** with **high** likes, comments, and shares
7	one **positive** Facebook update about stigma of **schizophrenia** with **low** likes, comments, and shares
8	one **negative** Facebook update about stigma of **schizophrenia** with **low** likes, comments, and shares

Facebook was chosen based on the following considerations: First, by 2014, Facebook was the dominant social networking platform in the U.S. in the number of users; 71% of online adults used Facebook, 22% used LinkedIn, 21% used Pinterest, 19% used Twitter, and 17% used Instagram (PewResearch Internet Project, 2014). Second, Facebook is one of the most frequently used social media tools by health organizations and professionals (Korda & Itani, 2013; Moorhead et al., 2013). Third, unlike microblogging applications such as Twitter which only allows 140 characters per tweet, Facebook allows longer messages in one status update and allows researchers to better manipulate the content and valence of a message. Thus, Facebook messages were used in the current study.

Participants

This study recruited a national adult sample by posting a task on Amazon's Mechanical Turk (MTurk).

Amazon's Mechanical Turk. Mechanical Turk (MTurk) is a web-based platform for recruiting people to perform tasks that require human intelligence to complete. Launched publicly by Amazon.com in 2005, MTurk has become one of the largest and most active online subject pools (Mason & Suri, 2012; Rand, 2012). To recruit subjects (known as Workers or Turkers in Amazon's vernacular), individuals or business owners (known as Requesters) first deposit funds to their Amazon payment account, then initiate a task (known as Human Intelligence Tasks [HITs] by posting a job title and a brief job description on the MTurk interface. Typical HITs include tagging people from images, transcribing audio to text, and filling out short surveys. The job description includes the content of the task, the estimated time to complete, the amount of compensation, and the number of people who can undertake the task. Requesters can also set specific criteria (e.g., country of residence and previous ratings) to select

Workers.When Workers who meet these criteria log onto MTurk, they find a list of sortable HITs available to them and can choose to participate. Requesters will need to approve completed HITs for payment, and Amazon charges Requesters 10% on all payments. The compensation for each HIT is usually small, ranging from 10¢ to $1 and rarely exceeding $1 (Paolacci, Chandler, & Ipeirotis, 2010).

Advantages of using MTurk as a tool for research. Although MTurk was primarily designed for business use, it offers a powerful tool for recruiting and compensating participants for online cognitive and behavioral research (Mason & Suri, 2012; Rand, 2012). As of October 2014, Google Scholar listed 90,800 search results with the phrase "Mechanical Turk," excluding patents and citations.

A number of researchers have recently explored the use of MTurk in various areas such as linguistic studies (Callison-Burch, 2009; Snow, O'Connor, Jurafsky, & Ng, 2008), visual perception and image recognition (Cole, Bedeian, & Field, 2006), judgment and decision making (Horton, Rand, & Zeckhauser, 2010), and economics of online labor markets (Chen & Horton, 2010; Horton & Chilton, 2010). Compared to traditional recruiting methods, using MTurk for conducting online experiments has the following four advantages: First, it provides easy access to a pool of thousands of potential participants, which makes recruitment less effortful and much faster. Shorter tasks are able to attract hundreds of Workers in a day (Buhrmester, Kwang, & Gosling, 2011). As Rand (2012) concluded, "[s]pending less than $1 per person is it possible to collect data from over 1000 subjects in only one or two days using AMT." (p. 175)

Second, empirical investigations and comparative analyses have consistently revealed that U.S. Workers on MTurk appear to be from a very diverse background. Around 55% of MTurk Workers reported being female and 45% reported being male (Mason & Suri, 2012). In

terms of age, ethnicity, education, and socio-economic status (SES), MTurk samples are at least as representative of the U.S. population as other Internet samples (e.g., convenient web-based samples or purpose-built websites; Buhrmester et al., 2011), and are always more demographically diverse than college undergraduate samples (Berinsky, Huber, & Lenz, 2012; Buhrmester et al., 2011; Mason & Suri, 2012; Paolacci et al., 2010).

Third, a key benefit of MTurk is its cost-effectiveness (Berinsky et al., 2012; Mason & Suri, 2012). Compared to experiments conducted with general adult population in traditional laboratory settings, the time investment costs with MTurk are much lower (Rand, 2012). Therefore, even monetary rewards that are 10 times lower can encourage a large number of people to participate on MTurk (Horton et al., 2010). The median wage of MTurk Workers is $1.38/hour (Horton & Chilton, 2010). It has also been found that, within a reasonable range, the relatively low compensation rates do not impair the quality of data (Buhrmester et al., 2011). For example, Paolacci et al. (2010) conducted a series of replications of classic studies at an hourly cost of $1.71, and achieved results comparable to studies in laboratory settings.

Finally, numerous studies have provided evidence that the data obtained through MTurk have both internal and external validity, and are at least as reliable as data collected via other channels (Berinsky et al., 2012; Buhrmester et al., 2011; Goodman, Cryder, & Cheema, 2013; Rand, 2012; Paolacci et al., 2010; Sprouse, 2011). Paolacci and colleagues (2010) reported the results of comparative studies using subjects from three different samples: a traditional university student sample, an Internet sample consisting of visitors to online discussion boards, and MTurk Workers. Their findings showed that the subjects' behaviors and attention levels were highly consistent between the MTurk sample and the other samples. With Internet techniques, Rand (2012) evaluated the consistency of demographic data reported by the same MTurk Workers

across two different studies, finding that agreement levels of demographic variables ranged between .81 and .98, and 97% of Workers' self-reported residence was consistent with their IP address. In summary, there is strong, consistent, and accumulating evidence regarding the validity of MTurk data, and the overall quality of MTurk data has been found to have "met or exceeded the psychometric standards associated with published research" (Buhrmester et al., 2011, p. 5). Table 3.2 shows comparisons among different recruiting methods (Paolacci et al., 2010, p. 414).

Table 3.2 Compare MTurk to Traditional Recruiting Methods

	Laboratory	Traditional web study	Web study with purpose built website	Mechanical Turk
Susceptibility to coverage error	High	Moderate	Moderate	Low
Heterogeneity of samples across labs	Moderate	High	High	Low
Non-response error	Low	High	High	Moderate
Subject motivation	Moderate / High	Low	Low	Low
Risk of multiple responses by one person	None	Moderate	Moderate	Low
Risk of contaminated subject pool	Moderate	Moderate	Moderate	Low
Risk of dishonest responses	Moderate	Low	Low	Low
Risk of experimenter effects	Low	None	None	None

As shown in Table 3.2, Mechanical Turk demonstrates its advantages in many aspects over both traditional lab-based and web-based recruiting methods. Therefore, many researchers have recognized the potential of MTurk for conducting social science research (Buhrmester et al., 2011; Berinsky et al., 2012) and for running cognitive and behavioral experiments (Mason & Suri, 2011, 2012; Rand, 2012). To sum up, both theoretical discussions and empirical findings suggest that MTurk is a promising and valid vehicle for data collection from diverse populations

(Paolacci et al., 2010). As Buhrmester et al. (2011) concluded, “we anticipate that MTurk will soon become a major tool for research in psychology and elsewhere in the social sciences” (p. 5). Thus, this dissertation makes a methodological contribution by expanding the application of MTurk in the communication domain.

Challenges and solutions. The main challenges and potential pitfalls of using MTurk for data collection should also be addressed. The first issue is subject attentiveness. As MTurk subjects usually click on tasks at their convenience rather than in a formal laboratory setting, researchers have very limited control over their subjects during the experiment (Rand, 2012). Thus, researchers should (a) remind Workers to read through the material carefully, and/or (b) use screening questions to monitor Workers’ attention level and exclude those who did not pay enough attention (Goodman et al., 2013). Second, it is possible that a single subject may participate in an online experiment multiple times to earn extra money. However, the default setting of the MTurk interface allows one Worker to complete a task only once, and Amazon has changed its policy to make efforts to verify each Worker’s identity and credit card information to prevent Workers from having multiple Amazon payment accounts (Rand, 2012). Thus, the repeated participation issue is not a large problem with MTurk (Rand, 2012). Third, researchers have found that some Workers exhibited a tendency to look up relevant information online when confronted with questions with factual answers (Goodman et al., 2013). Thus, when asking knowledge questions is inevitable, two approaches can be used to prevent the data from being corrupted: (a) ask Workers not to look up answers before completing all the questions, and (b) indicate in the instructions that Workers will not be paid if the manipulation check questions about the message content are not answered correctly (Goodman et al., 2013; Mason & Suri, 2012). Finally, some researchers (e.g., Sprouse, 2011) found that MTurk Workers were slightly

more likely to quit mid-experiment than subjects in the physical lab. This drawback can be overcome by recruiting more participants and by increasing the number of participants in each condition. In sum, although each data collection method has its limitations, there are some effective ways to filter out invalid answers and improve data quality on MTurk.

Use of MTurk for the current study. The recruitment was launched on Amazon's MTurk with a link to an external online survey site called Qualtrics for Workers to follow. When participants chose the task, they accessed the study via a hyperlink to Qualtrics. Qualtrics is a more secure and more robust alternative to other survey websites like SurveyMonkey (Corrigan, Powell, & Michaels, 2013). It allows researchers to randomly assign participants to conditions within one survey link. Workers saw instructions, answered pretest questions, read the stimuli message and answered posttest questions. On the stimuli page, an embedded timer that was invisible to Workers to recorded how much time they spent on reading the stimuli before clicking "Next." Meanwhile, each participant was forced to stay on the stimuli page for a fixed duration of 10 seconds. On the last page, a code was provided at the end of experiment and Workers had to enter the code on the MTurk page to verify their claimed participation. Verified Workers received compensation later. Those who spent too little time (e.g., 1 minute) on the survey were excluded from analysis.

Stimuli development

Message valence (positive vs. negative), stigma type (depression vs. schizophrenia), and virality (high vs. low) were manipulated through a mock Facebook status update from a fictitious organization called *Act For Mental Illness*. To enhance external validity, this fictitious organization name was made from a hashtag "#Act4MentalHealth" used by the nation's largest nonprofit grass-rooted mental health organization, the National Alliance on Mental Illness

(NAMI). In July 2014, NAMI began to use the hashtag "#Act4MentalHealth" on its official Facebook and Twitter pages. Later, NAMI also used this hashtag for its National Day of Action campaign on September 4th, 2014 to urge Congress to take action and pass legislation.

Stigma type. As this study aims to compare the results of educational interventions to reduce stigma related to depression and schizophrenia, the stigma type was manipulated by creating two versions of the message. The Facebook status updates began with a brief definition of each disorder (see Table 3.3). These two versions of the introduction were approximately equal length. In other parts of the message, the word depression/schizophrenia was changed when necessary.

Table 3.3 Manipulation of Stigma Type (Illness Type)

Stigma Type	Example
Depression	1 in 4 Americans is affected by mental illness, such as depression. Depression is a mental disorder characterized by sadness, feelings of tiredness or hopelessness, and loss of interest or pleasure. Depression can affect persons of any age, race, religion or income. It is an illness of the brain just like one of any other organs in the body. It can be successfully fought with treatment. However, the #1 reason that some people don't seek treatment is stigma. Stigma is negative attitudes, stereotypes, discrimination, and negative behavior toward an individual or group. The stigma of depression is common in today's society.
Schizophrenia	1 in 4 Americans is affected by mental illness, such as schizophrenia. Schizophrenia is a mental disorder characterized by profound disruptions in thinking and psychotic experiences such as hearing voices or delusions. Schizophrenia can affect persons of any age, race, religion or income. It is an illness of the brain just like one of any other organs in the body. It can be successfully fought with treatment. However, the #1 reason that some people don't seek treatment is stigma. Stigma is negative attitudes, stereotypes, discrimination, and negative behavior toward an individual or group. The stigma of schizophrenia is common in today's society.

Message valence. Following Alhabash et al. (2013), the tones of stimulus messages were operationalized by using statements emphasizing the benefits of reducing stigma associated with mental illness or the negative consequences of that stigma (see Table 3.4). To enhance the

essentially practical nature of the study, the researcher used existing Facebook posts and tweets by the National Alliance on Mental Illness (NAMI) as templates.

Table 3.4 Manipulation of Message Valence

Type of Valence	Example
Positive	The influence of your support, understanding, and help for people with depression is powerful beyond measure. A social environment that is friendly, caring, and supportive can do more good than harm. How about you? If everyone, including you, viewed people with depression as equally respectable, reliable, and capable, it would have a positive impact on their recovery process and life quality.
Negative	The influence of the stigma, prejudice, and discrimination against people living with schizophrenia is hurtful beyond measure. A social environment that is hostile, uncaring and unsupportive can do more harm than good. How about you? If everyone, including you, viewed people with schizophrenia as violent, unpredictable, and dangerous, it would have a negative impact on their recovery process and life quality.

Virality. The researcher adapted the manipulation in Alhabash et al. (2013) to create a low virality condition and a high virality condition. In the low virality condition, the status update received a few (less than five) Likes and Shares. In the high virality condition, the status update received a large number (between 1,000 and 1,100) of Likes and Shares. Moreover, a low virality status update received two comments (one male commenter and one female commenter), while a high virality status update received more than 500 comments and six comments were shown in the stimuli (three male commenters and three female commenters). Meanwhile, as the content of comments was not a focus of this study, most of the comments beneath the status updates were very brief and simple, such as “Thanks for the post” and “Thumbs up.”

Additionally, the fictional names of commenters were produced by a random name generator (http://random-name-generator.info/). This website offers three different services: “Common Names,” “Average Names,” and “Rare Names.” This study used “Average Names”

generated by the website. Also, all the commenters' profile pictures were provided by the researcher to avoid copyright issues.

In all eight conditions, the status update was shown as posted "1 hour ago." Previous research on the impact of recency of social media updates has found that, whether a social media message is updated "1 minute ago" (fast), "1 hour ago" (medium), or "1 day ago" (slow) has an impact on cognitive elaboration and credibility evaluation (Lachlan, Spence, Edwards, Reno, & Edwards, 2013; Westerman, Spence, & Van Der Heide, 2014). Thus, this study sets the speed of status update as medium, 1 hour ago.

Summary. Stimuli were presented to participants as screenshots of Facebook status updates. Before being exposed to the stimuli, the participants saw brief instructions that said: "Please pay attention and read the questions carefully. You need to be 19 years or older to take part in this study. You may not participate in this study twice." As this research was exploratory, only the most essential information in a status update was included in the stimulus materials. Other components of a typical Facebook page, such as Cover Photo, "About" section, Apps, Timeline, and Friend Activity were excluded from the design to achieve experimental control and to avoid confounding of results by other variables. The design elements (e.g., color, font, and layout) were identical for all messages, except for the message valence, mental illness type, and the number of Likes, Shares, and Comments (see Figure 3.1 and Figure 3.2).

In a pretest using 25 participants, all eight versions of the stimulus were tested for readability, clarity, and comprehensiveness. In the pretest, participants were asked whether any part of the stimuli or questionnaire was confusing.

Figure 3.1. Example of experimental stimuli: Depression + positive valence + high virality

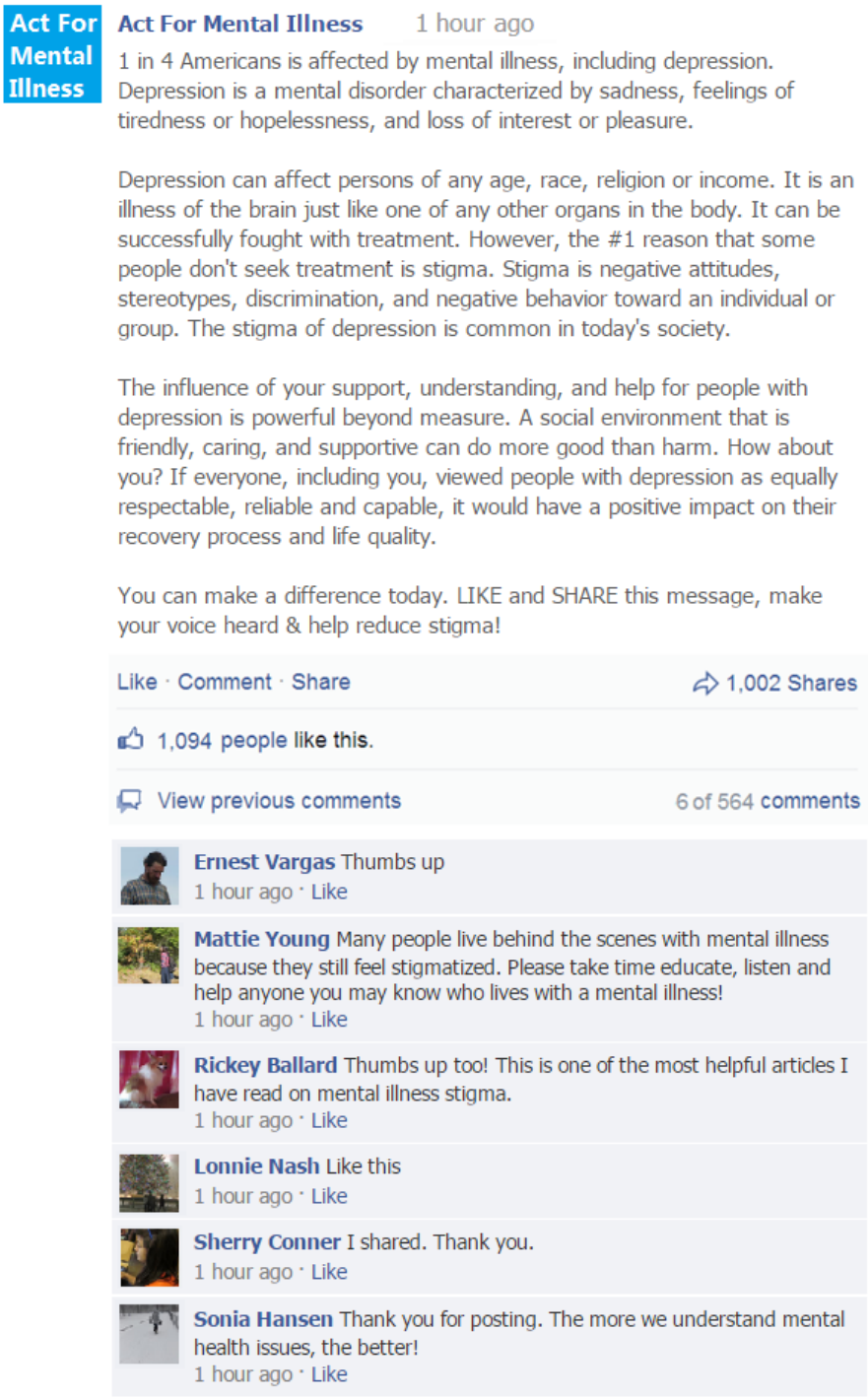
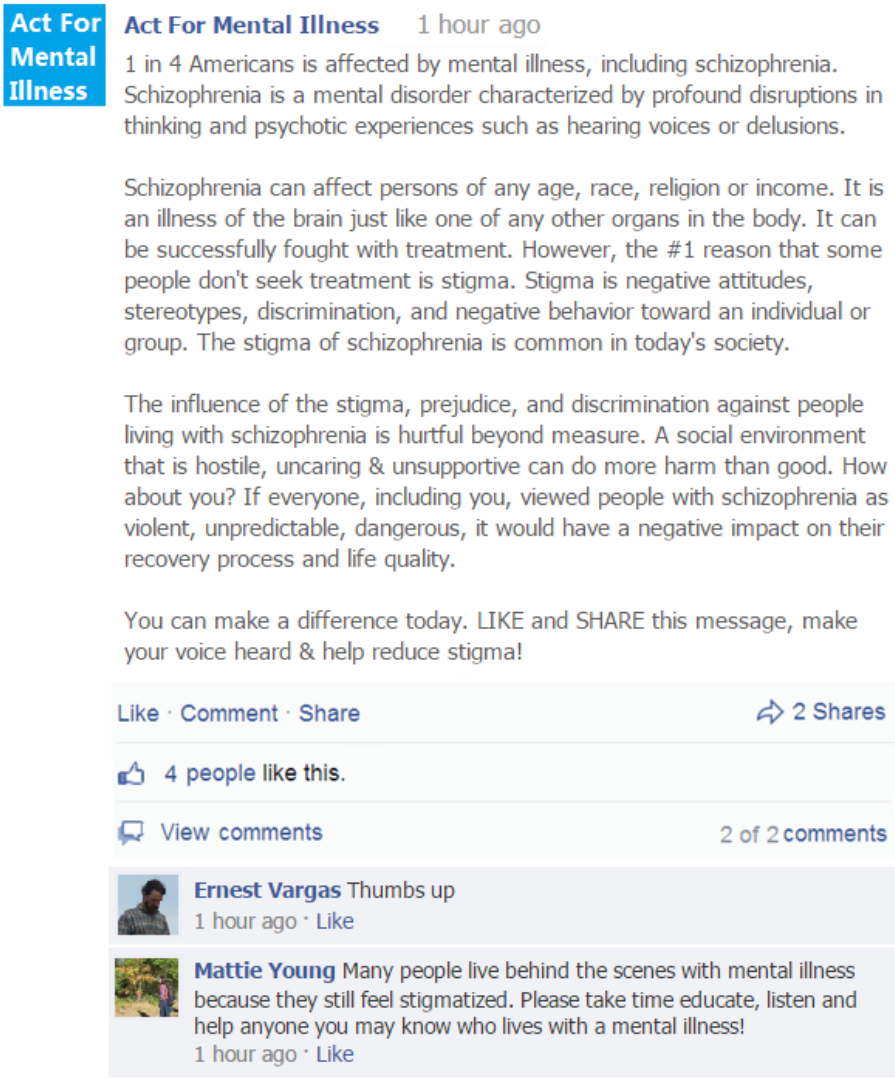


Figure 3.2. Example of experimental stimuli: Schizophrenia + negative valence + low virality



Procedure

After reading a brief introduction and signing the consent form (Appendix A) by clicking "I Agree", participants were asked to complete a background questionnaire that measured their social media use, preexisting attitude toward people with depression/schizophrenia, involvement with mental health issues, and perceptions of public stigma of mental illness. Then participants were randomly assigned to one of eight conditions hosted at Qualtrics.com. After reading the stimulus screenshot, they were asked to answer a series of questions designed to assess their (a)

attitudes toward the message, (b) post-exposure attitudes toward people with depression/schizophrenia, (c) perception of source credibility, (d) perception of message credibility, and (e) viral behavioral intentions (VBI). The questionnaire ended with manipulation checks and participants' demographic information. The last "thank you" page debriefed the purpose of the study.

Social Media Use

Two questions (modified from Vishwanath, 2014) were used on a six-point scale: "How often do you use Facebook?" and "How often do you use other online social networking sites like Twitter, LinkedIn, YouTube, Instagram, and Pinterest?" (0 = never use; 1 = not at all frequently, maybe once a day or rarely; 2 = not very frequently, two to four times a day; 3 = somewhat frequently, five to 10 times a day; 4 = frequently, almost every hour; 5 = very frequently, one or more times every hour; see Appendix B).

Independent Variables

This study measured the following potential independent variables (IVs): preexisting attitudes toward the mentally ill (seven items), personal involvement with the issue of mental illness (four items), and perceived public stigma of mental illness (five items).

Preexisting attitudes toward the mentally ill. Attitude refers to "a psychological tendency that is expressed by evaluating a particular entity with some degree of favor or disfavor" (Eagly & Chaiken, 1993, p. 1). This measurement started with a brief introduction to mental illness as follows (World Health Organization, 2014a, 2014b):

> According to the World Health Organization, mental disorders such as depression are affecting millions of people worldwide.

Depression is characterized by sadness, loss of interest or pleasure, feelings of guilt or low self-worth, disturbed sleep or appetite, feelings of tiredness, and poor concentration. (for conditions 1–4)

According to the World Health Organization, mental disorders such as schizophrenia are affecting millions of people worldwide.

Schizophrenia is a severe mental disorder, characterized by profound disruptions in thinking, affecting language, perception, and the sense of self. It often includes psychotic experiences, such as hearing voices or delusions. (for conditions 5–8)

After the introduction, research participants saw a shortened and modified version of a 20-item Attribution Questionnaire used by Corrigan et al. (2002). Participants in conditions 1–4 read questions about depression and those in conditions 5–8 read questions about schizophrenia. Participants responded to the items using a nine-point Likert scale (see Appendix C). The shortened version included seven items (see Table 3.5):

Table 3.5 Attitudes toward Mental Illness Scale (Corrigan et al., 2002)

Question	Ratings	Stigma dimension
I would feel unsafe around persons with depression/schizophrenia.	1 = not at all 9 = very much	dangerousness
Persons with depression/schizophrenia terrify me.	1 = not at all 9 = very much	fear
I would try to avoid a person with depression/schizophrenia.	1 = not at all 9 = very much	avoidance
How angry do persons with depression/schizophrenia make you feel?	1 = not at all 9 = very much	anger
How controllable do you think depression/schizophrenia is?	1 = not at all under personal control 9 = completely under personal control	personal responsibility
How likely is it that you would help a person with depression/schizophrenia?	1 = definitely would not 9 = definitely would	helping behavior
How certain do you feel that you would help a person with depression/schizophrenia?	1 = not at all certain 9 = absolutely certain	helping behavior

Personal involvement. Four items about personal relevance were adapted from Flora and Maibach's (1990) Mental illness-Involvement Measure: "I think about mental illness a great deal"; "I consider myself at risk of developing a mental illness"; "Mental illness is a personally relevant topic for me"; and "I actively seek the most recent information about mental illness."

Perceived stigmatization. Two items about perceived stigmatization were adapted from Pinel's (1999) stigma-consciousness questionnaire (SCQ): "Stereotypes about the mentally ill have not affected me personally," and "I never worry that my behaviors will be viewed as stereotypically mentally ill" (1 = strongly disagree; 9 = strongly agree) (see Appendix D).

Perceived public stigma of mental illness (social norm). A shortened version of the 12-item Devaluation-discrimination (D-D) scale (Link, Cullen, Struening, Shrout, & Dohrenwend, 1989) was used to measure perceived public stigma. The following five items were measured on 7-point Likert-type scales ranging from 1 (strongly agree) to 7 (strongly disagree): "Most people would willingly accept a former mental patient as a close friend"; "Most people believe that a former mental patient is just as trustworthy as the average citizen"; "Most people would accept a fully recovered former mental patient as a teacher of young children in a public school"; "Most people feel that entering a mental hospital is a sign of personal failure"; and "Most young women would be reluctant to date a man who has been hospitalized for a serious mental disorder" (see Appendix E).

Manipulation Check

The manipulation of stigma type was checked by asking respondents whether the screenshot that they just read was about depression, schizophrenia, bipolar disorder, or anxiety. As a manipulation check of message valence, participants were asked which of the two phrases appeared in the screenshot: "respectable, reliable, and capable" or "violent, unpredictable, and

dangerous." For the manipulation check of virality, respondents were asked whether the Facebook status update received 1–10, 11–50, or more than 51 Likes (see Appendix F).

Dependent Variables (DVs)

DV 1: Attitude toward the message. Participants were asked to rate the Facebook status updates along six statements using a 7-point scale (adapted from Stephens, Goins, & Dailey, 2014): The information in the Facebook post (a) is helpful, (b) is a valuable resource, (c) is important for health, (d) offers something useful to individuals, (e) offers something positive to individuals, and (f) is a waste of time (see Appendix G). The final item was reverse coded.

DV 2: Posttest attitude toward depression/schizophrenia. The post-exposure attitudes were measured with a modified version of the 9-item Attribution Questionnaire (also called AQ-9; Corrigan, Markowitz, Watson, Rowan, & Kubiak, 2003). The full AQ, which contains 27 items, is also called AQ-27 (Corrigan et al., 2003). Instead of measuring participants' general attitude toward persons with mental problems, the AQ-27 and the AQ-9 asked respondents to rate reactions in test scenarios. In the original AQ-9, respondents read a short vignette about Logan, a 30-year-old with schizophrenia who lives alone in an apartment, works full time as a clerk at a legal firm, and has been hospitalized six times because of mental illness. Sample questions included "How dangerous would you feel Logan is?" and "How scared of Logan would you feel?" (see Table 3.6).

This vignette in AQ-9 was adapted to the context of this study. First, a gender-neutral name, Logan, was used instead of "Harry" to avoid gender-related biases. In conditions 1–4, Logan was presented as a 30-year-old with depression who lives alone in an apartment, works full time as a clerk at a legal firm, and has been hospitalized six times because of his depression. In condition 5–8, the original vignette about Logan was used (see Appendix H).

Table 3.6 Six Items from AQ-9 Attribution Questionnaire (Corrigan et al., 2003)

Question	Ratings	Stigma dimension
How dangerous would you feel Harry is?	1 = not at all 9 = very much	dangerousness
How scared of Harry would you feel?	1 = not at all 9 = very much	fear
I would think that it was Harry's own fault that he is in the present condition.	1 = not at all 9 = very much	blame
How angry would you feel at Harry?	1 = definitely 9 = definitely not	anger
How likely is it that you would help Harry?	1 = definitely would help 9 = definitely would not help	helping behavior
I would try to stay away from Harry.	1 = not at all 9 = very much	avoidance

DV 3: Source credibility. The measure of source credibility (Lee & Sundar, 2013) is a 7-point semantic differential instrument with five pairs of adjectives (i.e., dependable/undependable, honest/dishonest, reliable/unreliable, sincere/insincere, and trustworthy/untrustworthy) (see Appendix I).

DV 4: Message credibility. A shortened version of a scale used by Lee and Sundar (2013) was used to measure the credibility of message content. Participants were asked to indicate the extent to which they thought the Facebook status update that they just read was "accurate", "believable", "fair", "objective", and "sensationalistic" biased on 7-point Likert-type scales ranging from 1 to 7 (see Appendix J).

DV 5: Viral behavioral intentions (VBI). Viral behavioral intentions were measured by a four-item scale based on previous studies (Alhabash et al., 2013; Alhabash & McAlister, 2014; Hu & Sundar, 2010; Lee & Sundar, 2013). Participants rated their agreement on a 7-point scale (1 = "strongly disagree", 7 = "strongly agree") to the following statements: (a) "I would 'Like' this post on Facebook"; (b) "I would 'Share' this post with my FB friends"; (c) "I would

comment on this post on Facebook"; and (d) "I would share what I have learned in this FB post with others through off-line interactions" (see Appendix K).

Demographic Variables. Participant gender, age, and race/ethnicity were measured (see Appendix L).

The study was approved by the Institutional Review Board (IRB) at the university where the researcher was affiliated (see Appendix M).

Statistical Treatment

First, reliability of all scales was checked with Cronbach's alpha. Then, the researcher used descriptive statistics to examine frequencies, means and standard deviations of demographics, social media use, and three covariates: preexisting attitudes toward the mentally ill, personal involvement with the issue of mental health, and perceived public stigma. Data transformation techniques in SPSS were used to create new variables when necessary. A complete summary of the statistical treatment is shown in Table 3.7.

RQ1: How many audience segments exist with regard to the stigma toward depression and schizophrenia?

To answer RQ1, the descriptive results of preexisting attitude measurement and the perceived stigmatization measurement were used.

H1: Preexisting attitudes toward depression would be significantly more positive than preliminary attitudes toward schizophrenia.

Independent Samples *t*-tests were used with preexisting attitudes as dependent variables to compare the preexisting attitudes toward schizophrenia and depression.

Testing covariates

Factorial ANOVAs were run on differences between groups across covariates (involvement and perceived public stigma).

RQ2: How do (a) attitudes toward the message; (b) perception of source credibility; (c) perception of message credibility; (d) viral behavioral intentions (VBI) to "Like" the message; (e) viral behavioral intentions (VBI) to "Share" the message; (f) viral behavioral intentions (VBI) to share the message with others through off-line interactions differ by audience segments?

One-way ANOVA tests were performed.

RQ3: How do posttest attitude toward people with (a) depression and (b) schizophrenia differ by audience segments?

One-way ANOVA and regression procedures were performed.

H2a-H2f: Compared to participants exposed to stigma-reducing messages about schizophrenia, participants exposed to stigma-reducing messages about depression will (a) have more favorable attitudes toward the message; (b) rate the source of the message as more credible; (c) rate the message content as more credible; (d) report higher viral behavioral intentions (VBI) to "Like" the message; (e) report higher viral behavioral intentions (VBI) to "Share" the message; (f) report higher viral behavioral intentions (VBI) to share the message with others through off-line interactions.

The statistical treatment for H2a-H2f was:

(1) Without covariates: Independent Samples T tests;

(2) If with significant covariates: ANCOVA tests.

H3a–H3f: Compared to participants exposed to negative-toned messages, participants exposed to positive-toned messages will (a) have more favorable attitudes toward the message; (b) rate

the source of the message as more credible; (c) rate the message content as more credible; (d) report higher viral behavioral intentions (VBI) to "Like" the message; (e) report higher viral behavioral intentions (VBI) to "Share" the message; (f) report higher viral behavioral intentions (VBI) to share the message with others through off-line interactions.

The statistical treatment for H3a-H3f was:

(1) Without covariates: Independent Samples *t*-tests;

(2) With significant covariates: ANCOVA tests.

H4a–H4f: Compared to participants exposed to low virality messages, participants exposed to high virality messages will (a) have more favorable attitudes toward the message; (b) rate the source of the message as more credible; (c) rate the message content as more credible; (d) report higher viral behavioral intentions (VBI) to "Like" the message; (e) report higher viral behavioral intentions (VBI) to "Share" the message; (f) report higher viral behavioral intentions (VBI) to share the message with others through off-line interactions.

The statistical treatment for H4a–H4f was:

(1) Without covariates: Independent Samples *t*-tests;

(2) With significant covariates: ANCOVA tests.

H5a: Participants exposed to positive-toned messages will show more favorable posttest attitude.

H5b: Participants exposed to high virality messages will show more favorable posttest attitude.

The statistical treatment for H5a–H5b was regression analysis.

RQ4: How will the interactions among audience segment, valence, and virality affect (a) attitudes toward the message; (b) perception of source credibility; (c) perception of message credibility; (d) viral behavioral intentions (VBI) to "Like" the message; (e) viral behavioral

intentions (VBI) to "Share" the message; (f) viral behavioral intentions (VBI) to share the message with others through off-line interactions?

The statistical treatment for RQ4 was:

(1) Without covariates: Factorial ANOVA;

(2) With significant covariates: ANCOVA tests.

H6: There will be a positive correlation between (a) attitudes toward the message and viral behavioral intentions (VBI); (b) perception of source credibility and viral behavioral intentions (VBI); (c) perception of message credibility and viral behavioral intentions (VBI).

The statistical treatment for H6a–H6c were (1) Correlation tests and (2) a multiple regression using viral behavioral intentions (VBI) as the depednent variable.

Table 3.7 Summary of Statistical Treatment

	Research Question/Hypothesis	Variables	Statistics
RQ1a	How many audience segments exist with regard to the stigma toward depression?	preexisting attitude, perceived stigmatization, helping intention	descriptive
RQ1b	How many audience segments exist with regard to the stigma toward schizophrenia?	preexisting attitude, perceived stigmatization, helping intention	descriptive
H1	Preexisting attitudes toward depression would be significantly more positive than preexisting attitudes toward schizophrenia	IV: stigma type DV: preexisting attitude	*t*-test
Testing covariate	whether there were differences in covariate scores (involvement and perceived public stigma) between manipulated groups		factorial ANOVAs
RQ2a	How do the audience segments influence attitudes toward the message?	IV: audience segments DV: attitude toward the message	one-way ANOVA
RQ2b	How do the audience segments influence perception of source credibility?	IV: audience segments DV: source credibility	one-way ANOVA

RQ2c	How do the audience segments influence perception of message credibility?	IV: audience segments DV: message credibility	one-way ANOVA
RQ2d	How do the audience segments influence viral behavioral intentions (VBI) to "Like" the message?	IV: audience segments DV: Intention – "Like"	one-way ANOVA
RQ2e	How do the audience segments influence viral behavioral intentions (VBI) to "Share" the message?	IV: audience segments DV: Intention – "Share"	one-way ANOVA
RQ2f	How do the audience segments influence viral behavioral intentions (VBI) to share the message with others through off-line interactions?	IV: audience segments DV: Intention – share the message through off-line interactions	one-way ANOVA
RQ3a	How do posttest attitude toward people with depression differ by audience segments?	IV: audience segments DV: posttest attitude	one-way ANOVA & Regression
RQ3b	How do posttest attitude toward people with schizophrenia differ by audience segments?	IV: audience segments DV: posttest attitude	one-way ANOVA & Regression
H2a	Participants exposed to stigma-reducing messages about depression will have more favorable attitudes toward the message	IV: stigma type (depression vs. schizophrenia) DV: attitude toward the message	*t*-test/ ANCOVA
H2b	Participants exposed to stigma-reducing messages about depression will rate the source of the message as more credible	IV: stigma type (depression vs. schizophrenia) DV: source credibility	*t*-test/ ANCOVA
H2c	Participants exposed to stigma-reducing messages about depression will rate the message content as more credible	IV: stigma type (depression vs. schizophrenia) DV: message credibility	*t*-test/ ANCOVA
H2d	Participants exposed to stigma-reducing messages about depression will report higher viral behavioral intentions (VBI) to "Like" the message	IV: stigma type (depression vs. schizophrenia) DV: VBI – "Like"	*t*-test/ ANCOVA
H2e	Participants exposed to stigma-reducing messages about depression will report higher viral behavioral intentions (VBI) to "Share" the message	IV: stigma type (depression vs. schizophrenia) DV: VBI – "Share"	*t*-test/ ANCOVA
H2f	Participants exposed to stigma-reducing messages about depression will report higher viral behavioral intentions (VBI) to share the message	IV: stigma type (depression vs. schizophrenia) DV: VBI – share the message through off-line interactions	*t*-test/ ANCOVA

	with others through off-line interactions		
H3a	Participants exposed to positive-toned messages will have more favorable attitudes toward the message	IV: message valence (positive vs. negative) DV: attitude toward the message	*t*-test/ ANCOVA
H3b	Participants exposed to positive-toned messages will rate the source of the message as more credible	IV: message valence (positive vs. negative) DV: source credibility	*t*-test/ ANCOVA
H3c	Participants exposed to positive-toned messages will rate the message content as more credible	IV: message valence (positive vs. negative) DV: message credibility	*t*-test/ ANCOVA
H3d	Participants exposed to positive-toned messages will report higher viral behavioral intentions (VBI) to "Like" the message	IV: message valence (positive vs. negative) DV: VBI – "Like"	*t*-test/ ANCOVA
H3e	Participants exposed to positive-toned messages will report higher viral behavioral intentions (VBI) to "Share" the message	IV: message valence (positive vs. negative) DV: VBI – "Share"	*t*-test/ ANCOVA
H3f	Participants exposed to positive-toned messages will report higher viral behavioral intentions (VBI) to share the message with others through off-line interactions	IV: message valence (positive vs. negative) DV: VBI – share the message through off-line interactions	*t*-test/ ANCOVA
H4a	Participants exposed to high virality messages will have more favorable attitudes toward the message	IV: virality (viral reach: high vs. low) DV: attitude toward the message	*t*-test/ ANCOVA
H4b	Participants exposed to high virality messages will rate the source of the message as more credible	IV: virality (viral reach: high vs. low) DV: source credibility	*t*-test/ ANCOVA
H4c	Participants exposed to high virality messages will rate the message content as more credible	IV: virality (viral reach: high vs. low) DV: message credibility	*t*-test/ ANCOVA
H4d	Participants exposed to high virality messages will report higher viral behavioral intentions (VBI) to "Like" the message	IV: virality (viral reach: high vs. low) DV: VBI – "Like"	*t*-test/ ANCOVA
H4e	Participants exposed to high virality messages will report higher viral behavioral intentions (VBI) to "Share" the message	IV: virality (viral reach: high vs. low) DV: VBI – "Share"	*t*-test/ ANCOVA
H4f	Participants exposed to high virality messages will report higher viral behavioral intentions (VBI) to share	IV: virality (viral reach: high vs. low)	*t*-test/ ANCOVA

	the message with others through off-line interactions	DV: VBI – share the message through off-line interactions	
H5a	Participants exposed to positive-toned messages will show more favorable posttest attitude.	IV: message valence (positive vs. negative) DV: posttest attitude	Regression
H5b	Participants exposed to high virality messages will show more favorable posttest attitude.	IV: virality (viral reach: high vs. low) DV: posttest attitude	Regression
RQ4a	How will the interactions among audience segments, valence, and virality affect attitudes toward the message?	IV: audience segment × valence × virality DV: attitude toward the message	Factorial ANOVA
RQ4b	How will the interactions among audience segments, valence, and virality affect perception of source credibility?	IV: audience segment × valence × virality DV: source credibility	Factorial ANOVA/ ANCOVA
RQ4c	How will the interactions among audience segments, valence, and virality affect perception of message credibility?	IV: audience segment × valence × virality DV: message credibility	Factorial ANOVA/ ANCOVA
RQ4d	How will the interactions among audience segments, valence, and virality affect viral behavioral intentions (VBI) to “Like” the message?	IV: audience segment × valence × virality DV: VBI - “Like”	Factorial ANOVA/ ANCOVA
RQ4e	How will the interactions among audience segments, valence, and virality affect viral behavioral intentions (VBI) to “Share” the message?	IV: audience segment × valence × virality DV: VBI – “Share”	Factorial ANOVA/ ANCOVA
RQ4f	How will the interactions among audience segments, valence, and virality affect viral behavioral intentions (VBI) to share the message with others through off-line interactions?	IV: audience segment × valence × virality DV: VBI - share the message through off-line interactions	Factorial ANOVA/ ANCOVA
H6a	There will be a positive correlation between attitudes toward the message and viral behavioral intentions (VBI)	IV: attitudes toward the message DV: viral behavioral intentions (VBI)	Pearson Correlation
H6b	There will be a positive correlation between perception of source credibility and viral behavioral intentions (VBI)	IV: perception of source credibility DV: viral behavioral intentions (VBI)	Pearson Correlation

H6c	There will be a positive correlation between perception of message credibility and viral behavioral intentions (VBI)	IV: perception of message credibility DV: viral behavioral intentions (VBI)	Pearson Correlation
H6a-H6c	An overall test of the relationship between attitudes toward the message, perception of source credibility, perception of message credibility and viral behavioral intentions (VBI)	IV: attitudes toward the message, perception of source credibility, perception of message credibility DV: viral behavioral intentions (VBI)	Multiple Regression

CHAPTER 4

RESULTS

Manipulation Check

The number of participants included in the analysis was 265. Although 327 participants opened the Qualtrics link and started to answer questions, 38 were eliminated because they skipped more than three questions, leaving 289 participants. Another 23 participants were removed after the manipulation checks, leaving 265 for data analysis.

Manipulation check: Stigma type. To determine whether the manipulation of type of mental illness stigma was successful, participants were asked "The Facebook status update you just read was about stigma of: A. depression; B. schizophrenia; C. bipolar disorder; D. anxiety." The vast majority of the 289 participants passed the manipulation check. In the four depression conditions (N = 146), 100% (n = 146) of the participants considered the Facebook status update they just read to be about stigma of depression, and 97.9% (n = 140) of the participants in the four schizophrenia conditions (N = 143) considered the Facebook status update they just read to be about stigma of schizophrenia.

Manipulation check: Message valence. To determine whether the manipulation of message valence was successful, participants were asked "Which of the two phrases appeared in the Facebook status update you just read? A. respectable, reliable and capable; B. violent, unpredictable, and dangerous." The majority of the 289 participants passed the manipulation check. In the positive valence conditions (N = 147), 91.2% (n = 134) of the participants passed

the manipulation check. In the negative valence conditions (N = 142), 61.3% (n = 87) of the participants passed the manipulation check.

Manipulation check: Virality (viral reach). To determine whether the manipulation of virality was successful, participants were asked "How many Likes did the Facebook status update receive? A. 1–10; B. 11–50; C. more than 51." The vast majority of the 289 participants passed this manipulation check. In the high virality conditions (N = 146), 82.2% (n = 120) of the participants passed the manipulation check. In the low virality conditions (N = 143), 69.2% (n = 99) of the participants passed the manipulation check.

Removal of cases. To improve the quality of data, one underage participant was deleted from analysis (age = 18 < 19), and 23 participants who answered more than one of the three manipulation check questions incorrectly were removed from subsequent analyses, so the number of participants included in the analysis was 265.

Of the 265 participants, 264 (99.2%) passed the manipulation of the stigma types (depression conditions: 100% passed; schizophrenia: 98.5% passed), 223 (84.2%) passed the manipulation check of message valence (positive valence conditions: 96.4% passed; negative valence conditions: 70.9% passed), and 217 (81.9%) passed the manipulation of virality (high virality conditions: 89.6% passed; low virality conditions: 74.0% passed).

Demographic Profile of Sample

Participants' ages ranged from 20 to 75 years, with a mean of 33.68 (SD = 10.90). Participants included 117 females (44.2%), 146 males (55.1%), and two who did not indicate sex (.8%). In terms of racial composition, the majority of participants self-identified as White/Caucasian (77.4%, n = 205), 7.2% (n = 19) reported being African American, 7.5% (n = 20) Asian or Pacific Islander, 4.1% (n=11) Hispanic, .4% (n = 1) Native American, and 3.4% (n

= 9) other. The average time participants spent on this study was 7 minutes 55 seconds (475 seconds; 95% Confidence Interval for mean = 425 - 525 seconds). The average time participants spent on the stimuli page was 40.2 seconds (95% Confidence Interval for mean = 34.7 ~ 45.7 seconds). Demographics for this sample are summarized in Table 4.1.

Table 4.1 Demographic Characteristics of Participants, n = 265

Characteristic	
Age	
Mean (SD)	33.68 (SD = 10.90)
Range	19–75
Gender	
Female	117 (44.2%)
Male	146 (55.1%)
Not reported	2 (.8%)
Ethnicity	
Caucasian	205 (77.4%)
African American	19 (7.2%)
Asian or Pacific Islander	20 (7.5%)
Hispanic or Latino	11 (4.2%)
Native American	1 (.4%)
Other or Not reported	9 (3.4%)

Qualtrics placed participants into one of the eight conditions included in the 2 × 2 × 2 experiment. Table 4.2 displays the distribution of participants by manipulation type, indicating that the distribution of participants was almost even across all manipulation types. Table 4.3 shows the distribution of participants among the experimental conditions, indicating that at least 31 participants were in each of the eight cells.

Table 4.2 Participant Distribution by Manipulation, n = 265

Manipulation	N (%)
Stigma type: Depression	135 (50.9%)
Stigma type: Schizophrenia	130 (49.1%)
Message valence: Positive	138 (52.1%)
Message valence: Negative	127 (47.9%)
Virality (Viral reach): High	134 (50.6%)
Virality (Viral reach): Low	131 (49.4%)

Table 4.3 Participant Distribution in Each Condition, n = 265

Condition	Stigma type	Valence	Virality	Participants N (%)
1	depression	positive	high	35 (13.2%)
2	depression	negative	high	32 (12.1%)
3	depression	positive	low	37 (14.0%)
4	depression	negative	low	31 (11.7%)
5	schizophrenia	positive	high	35 (13.2%)
6	schizophrenia	negative	high	32 (12.1%)
7	schizophrenia	positive	low	31 (11.7%)
8	schizophrenia	negative	low	32 (12.1%)

Participants were also asked about their social media consumption. Most participants reported having used social media (97.7%) and Facebook (92.9%). Most participants reported using social media more than two times a day (79.8%), and two thirds of participants said they use Facebook more than two times a day (64%). Table 4.4 showcases participants' social media consumption frequencies.

Table 4.4 Participants' Social Media Consumption, n = 265

Social media use	Participants N (%)
never	6 (2.3%)
once a day or rarely	48 (18.1%)
two to four times a day	56 (21.1%)
five to 10 times a day	89 (33.6%)
almost every hour	42 (15.8%)
one or more times every hour	24 (9.1%)
Facebook use	
never	19 (7.2%)
once a day or rarely	77 (29.1%)
two to four times a day	56 (21.1%)
five to 10 times a day	71 (26.8%)
almost every hour	25 (9.4%)
one or more times every hour	17 (6.4%)

Scale Reliability

The researcher utilized Cronbach's α coefficients to test the internal consistency of the scales used in the experiment, along with 95% confidence intervals (Iacobucci & Duhachek, 2003). To interpret the value of Cronbach's α, George and Mallery (2003) provided the

following rules of thumb: "_ > .9 – Excellent, _ > .8 – Good, _ > .7 – Acceptable, _ > .6 – Questionable, _ > .5 – Poor, and _ < .5 – Unacceptable" (p. 231). First, the researcher used Cronbach's α to test the reliability of scales used to measure independent variables, reliability coefficients of .77 for stigmatizing attitudes (pretest), .87 for involvement, .72 for perceived stigma, and .81 for perceived public stigma (social norm) were obtained. All were considered reliable. Moreover, analysis of scales used to measure the dependent variables showed a Cronbach's alpha reliability estimate of .79 for stigmatizing attitudes (posttest), .93 for attitude toward the message, .95 for source credibility, .94 for message credibility, and .87 for viral behavioral intentions (VBI). Thus, all dependent variable measures exhibited satisfactory reliability. Table 4.5 contains score reliability information for each scale.

Table 4.5 Scale Reliability

Variable	N of items	Reliability	
		α	95% CI
Pretest attitudes	7	.77	.728 ~ .813
Issue involvement (personal relevance)	4	.87	.847 ~ .897
Perceived stigma	2	.72	.599 ~ .797
Perceived public stigma (social norm)	5	.81	.774 ~ .845
Posttest attitudes	6	.79	.745 ~ .825
Attitude toward the message	6	.93	.913 ~ .940
Source credibility	5	.95	.934 ~ .955
Message credibility	5	.94	.926 ~ .950
Viral behavioral intentions (VBI)	4	.87	.834 ~ .891

Research Questions and Hypotheses

In the following, the findings from the study are presented in accordance with research questions and hypotheses. Major findings for each research question/hypothesis are showcased in Table 4.6–Table 4.14 and Figure 4.1–Figure 4.4. A summary of the most important numbers and results is given in Table 4.15.

RQ1a-b: How many audience segments exist with regard to the stigma toward (a) depression? (b) schizophrenia?

Characteristics of each audience segment. Research Question 1 explored how many audience segments exist with regard to the stigma toward depression and schizophrenia. Based on the definition and characteristics of each audience segment by Goffman (1963) and Smith (2012), the Table 4.6 shows the number of participants in each audience segment.

Table 4.6 Characteristics of Each Audience Segment

Segment	Pre-existing attitude	Perceived Stigmatization	Helping intention	n (%)
Stigmatizers	negative	not feeling stigmatized	no	17 (6.4%)
Stigmatized	positive or neutral	feeling stigmatized	/	39 (14.7%)
Active supporters	positive or neutral	not feeling stigmatized	yes	94 (35.5%)
Passive supporters	positive or neutral	not feeling stigmatized	no	115 (43.4%)
Total				265 (100%)

To answer RQ1, the descriptive results of the preexisting attitude and perceived stigmatization measurement were used. The pre-existing attitude items were averaged to divide participants into three groups: negative, neutral, and positive. The two items of perceived stigmatization were averaged to divide participants into two groups: feeling stigmatized and not feeling stigmatized. Then the participants were divided into three categories of (a) *stigmatizers*, (b) *stigmatized*, and (c) *supporters*.

Furthermore, based on the average score of the two items about helping behavior "How likely is it that you would help a person with depression/schizophrenia?" (1= definitely would not, 9 = definitely would), "How certain do you feel that you would help a person with depression/schizophrenia?" (1 = not at all certain, 9 = absolutely certain)—participants were divided into two groups: "helping," and "not helping/neutral." Participants who were both

“supporters” and “helping” were considered as Smith’s (2012) “active supporters,” while the “supporters” who fell into “not helping” and “neutral” groups were considered as Smith’s (2012) “passive supporters.”

Determination of cut-off points. The cut-off points used during the analysis are shown in Table 4.7. The choice of these cut-off points would appear to be rather arbitrary, so in the following statistical analyses, each time the audience segment variable is involved, an additional analysis using the original audience characteristics data as continuous variables was also performed. In fact, similar results were obtained with the original audience characteristics as continuous variables whenever the audience segments attained significance as a categorical variable.

Table 4.7 Cut-off Points for the Determination of Audience Segments

Variable	Scale	Cut-off points	
		Cut-off point	n (%)
Preexisting attitude	1 = positive 9 = negative	1–6 = Positive/Neutral 6.01–9 = Negative	248 (93.6%) 17 (6.4%)
Perceived stigmatization	1 = Yes 9 = No	1–3 = Feeling stigmatized 3.01–9 = Neutral/Nonstigmatized	39 (14.7%) 226 (85.3%)
Helping intention	1 = No 9 = Yes	1–6.99 = Not helping/Neutral 7-9 = Yes, will help	139 (52.5%) 126 (47.5%)

Audience segment by depression/schizophrenia. A Chi-square test indicated that overall there were significant differences between the participant distribution with regard to the stigma toward depression and schizophrenia, χ^2 (3, n = 265) = 32.730, $p < .001$. As is shown in Table 4.8, among the 265 participants used for this analysis, only three audience segments exist with regard to the stigma toward depression, whereas four audience segments exist with regard to the stigma toward schizophrenia. More supporters were found with regard to depression, while all the *stigmatizers* were found with regard to schizophrenia, answering Research Question 1.

Table 4.8 Number of People in Each Audience Segment by Depression/Schizophrenia

Segment	Depression	Schizophrenia
Stigmatizers	0 (0%)	17 (13.1%)
Stigmatized	26 (19.3%)	13 (10%)
Active supporters	61 (45.2%)	33 (25.4%)
Passive supporters	48 (35.6%)	67 (51.5%)
Total	135 (100%)	130 (100%)

Additional analyses regarding preexisting attitudes. Although in Table 4.6, the preexisting attitudes toward depression/schizophrenia among "Stigmatized," "Active supporters," and "Passive supporters" were all shown as "positive or neutral," post hoc comparisons found that this "positive or neutral" attitude was not equal across the three groups. Tukey tests indicated that:

(1) For preexisting attitudes toward depression, the mean attitude scores from "Passive supporters" (M = 3.25, SD = .99) were significantly more negative than "Active supporters" (M = 2.20, SD = .90) and "Stigmatized" (M = 2.15, SD = .88). However, the "Active supporters" did not significantly differ from the "Stigmatized."

(2) For preexisting attitudes toward schizophrenia, the mean attitude scores from the "Stigmatizers" (M = 6.59, SD = .44) were significantly more negative than all other groups including "Passive supporters" (M = 4.37, SD = .99), "Active supporters" (M = 3.36, SD = 1.15), and "Stigmatized" (M = 3.82, SD = 1.35); and the attitude from "Passive supporters" was significantly more negative than "Active supporters" (for each comparison, $p < .001$). Again, the "Active supporters" and the "Stigmatized" did not significantly differ from each other ($p = .55 > .05$).

Taken together, these post hoc analysis results suggest that no matter what the mental illness type, overall, "Active supporters" and "Stigmatized" hold the most positive attitude, followed by "Passive supporters"; "Stigmatizers" hold the most negative attitude.

H1: Preexisting attitudes toward depression would be significantly more positive than preexisting attitudes toward schizophrenia.

To test Hypothesis 1, a series of independent samples *t*-tests were conducted to compare the preexisting attitudes toward depression (n = 135) and schizophrenia (n = 130). Before carrying out the analysis, a descriptive analysis was run to examine the normality of the overall preexisting attitude scores. The skewness was [.415, .150], between -1 and 1, and kurtosis of the preexisting attitude score was [-.009, .414], between -1 and 2, so the preexisting attitude variable was considered to have a normal distribution.

Six items were included to compare six different dimensions of stigma toward schizophrenia or depression. Holm's sequential Bonferroni procedure was used to adjust the *p*-value as multiple tests were run simultaneously (Abdi, 2010). Significant differences were found for all but one of the following stigma dimensions:

Table 4.9
T-test Results Comparing Different Dimensions of Stigma Toward Depression /Schizophrenia

Stigma dimension	Question	Depression	Schizophrenia	t	Effect size
dangerousness	I would feel unsafe around persons with depression/schizophrenia.	M=2.37 SD=1.72	M=5.44 SD=2.20	12.66*	r(263)= .615
fear	Persons with depression/schizophrenia terrify me.	M=1.69 SD=1.19	M=4.55 SD=2.28	12.87*	r(263)= .622
avoidance	I would try to avoid a person with depression/schizophrenia.	M=2.64 SD=2.03	M=5.56 SD=2.49	10.48*	r(263)= .543
anger	How angry do persons with depression/schizophrenia make you feel?	M=1.51 SD=1.06	M=2.36 SD=1.98	4.36*	r(263)= .260
personal responsibility	How controllable do you think depression/schizophrenia is?	M=4.18 SD=2.04	M=4.05 SD=2.08	-.50	r(263)= .03

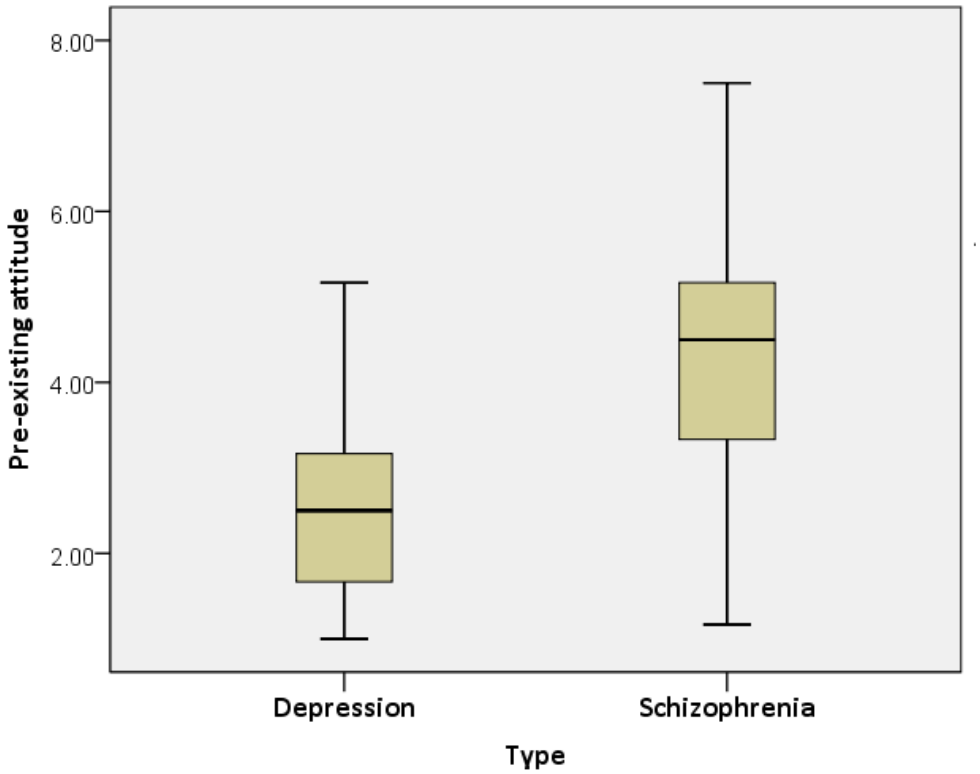
helping intention	How likely is it that you would help a person with depression/schizophrenia?	M=6.99 SD=1.84	M=5.88 SD=2.05	-4.64*	r(263)= .275

*$p < .001$.

As is shown in the table above, participants reported more negative and stigmatizing attitudes toward schizophrenia than depression, including the dimensions of dangerousness ($p < .001$, r(264) = .615), fear ($p < .001$, r(264) = .622), avoidance ($p < .001$, r(264) = .543), and anger ($p < .001$, r(264) = .260). The analysis also indicated a higher intention to help people with depression than people with schizophrenia ($p < .001$, r(264) = .275). The only dimension that did not significantly differ between attitudes toward schizophrenia and depression was personal responsibility ($p = .603 > .05$).

The boxplot below (Figure 4.1) shows the center and spread of the distribution of preexisting attitude data (the higher the attitude score, the more stigmatizing).

Figure 4.1 Distribution of preexisting attitude



The plot above suggests that the preexisting attitude data for schizophrenia were more evenly distributed, while the corresponding data for depression were more skewed. Moreover, the Y axis shows the score of preexisting stigmatizing attitude; the higher the box, the more negative the attitude is. The box for the schizophrenia group is visibly higher than the box for the depression group. The median, which is a common measure of the mid-point of the data, is represented by the line in the box. The median for the schizophrenia group is visibly higher than the median for the depression group. As a result, the preexisting attitude toward schizophrenia is more negative than the attitude toward depression. Thus, Hypothesis 1 was supported.

Testing covariates

To test the possible effects of potential covariates (involvement and perceived public stigma), a series of factorial ANOVAs were run on covariates and independent variables. All the ANOVAs found no significant differences in the involvement (personal relevance of mental disorders) and perceived social stigma against mental disorders (social norm) between manipulated groups.

RQ2: How do the audience segments influence (a) attitudes toward the message; (b) perception of source credibility; (c) perception of message credibility; (d) viral behavioral intentions (VBI) to "Like" the message; (e) viral behavioral intentions (VBI) to "Share" the message; (f) viral behavioral intentions (VBI) to share the message with others through off-line interactions?

To answer RQ2, one-way ANOVA tests were performed to compare the effects of types of audience segments (a categorical independent variable) on six dependent variables (continuous variables). Since RQ1 found three audience segments for depression and four audience segments for schizophrenia, the researcher also decided to run the ANOVA procedures for the depression group and the schizophrenia group separately. First, descriptive statistics were

run to check the normality of the dependent variables values. The skewness was between -1 and 1 for all dependent variables and the kurtosis was between -1 and 2, meaning that the data were normal. All results are showcased in Table 4.10 below and post hoc results are discussed.

Table 4.10 ANOVA results with Audience Segments and Dependent Variables

	ANOVA	Depression group	Schizophrenia group	Post hoc tests
RQ2a	IV: audience segments DV: attitude toward the message	$F(2, 134) = 5.02$ $p = .008$ $\eta^2 = .07$	$F(3, 126) = 4.67$ $p = .004$ $\eta^2 = .10$	active supporters > passive supporters (both groups)
RQ2b	IV: audience segments DV: source credibility	$F(2, 133) = 7.91$ $p = .001$ $\eta^2 = .11$	$F(3, 125) = 3.67$ $p = .014$ $\eta^2 = .08$	active supporters > passive supporters (both groups)
RQ2c	IV: audience segments DV: message credibility	$F(2, 133) = 10.02$ $p < .001$ $\eta^2 = .14$	$F(3, 126) = 4.08$ $p = .008$ $\eta^2 = .09$	active supporters > passive supporters (both groups)
RQ2d	IV: audience segments DV: Intention – "Like"	$F(2, 134) = 15.93$ $p < .001$ $\eta^2 =.19$	$F(3, 126) = 4.11$ $p = .005$ $\eta^2 =.09$	active supporters > passive supporters (both groups)
RQ2e	IV: audience segments DV: Intention – "Share"	$F(2, 134) = 11.72$ $p < .001$ $\eta^2 = .15$	$F(3, 126) = 4.56$ $p = .005$ $\eta^2 = .10$	active supporters > passive supporters (both groups)
RQ2f	IV: audience segments DV: Intention – share the message through off-line interactions	$F(2, 134) = 10.43$ $p < .001$ $\eta^2 = .14$	$F(3, 126) = 3.26$ $p = .020$ $\eta^2 = .08$	active supporters > passive supporters (both groups)

RQ2a sought to explore how different types of audience segments (*stigmatizers*, *stigmatized*, *active supporters*, and *passive supporters*) would influence participants' attitude toward the message. Analyses of variance (ANOVAs) showed that:

(1) In the depression group, the *p*-value for the Levene's test was not significant ($p > .05$), confirming equal variance. There was a significant difference in message attitude scores among three audience segments (*stigmatized*, *active supporters*, and *passive supporters*), $F(2, 134) = 5.02$, $p = .008$, $\eta^2 = .07$. To determine where the significance was located among the three groups, a Tukey post hoc test was conducted and revealed one significant difference between the *active* and *passive supporters* at a .05 level ($p = .006$); the *active supporters* (M = 5.84, SD = 1.09) had a higher mean message attitude score than the *passive supporters* (M = 5.03, SD = 1.46), statistical power = .81.

(2) In the schizophrenia group, Levene's test was not significant ($p > .05$). A significant difference in message attitude scores was found among four audience segments (*stigmatizers*, *stigmatized*, *active supporters*, and *passive supporters*), $F(3, 126) = 4.67$, $p = .004$, $\eta^2 = .10$. To determine where the significance was located among these groups, a Tukey post hoc test was conducted and revealed a significant difference between the *active* and *passive supporters* at a .05 level ($p = .003$); the *active supporters* (M = 6.03, SD =.89) had a higher mean message attitude score than the *passive supporters* (M = 5.23, SD = 1.05), statistical power = .88.

RQ2b sought to explore how different types of audience segments (*stigmatizers*, *stigmatized*, *active supporters*, and *passive supporters*) would influence participants' source credibility perception. Analyses of variance (ANOVAs) showed that:

(1) In the depression group, the *p*-value for the Levene's test was not significant ($p > .05$), confirming equal variance. A significant difference in source credibility scores among three audience segments (*stigmatized*, *active supporters*, and *passive supporters*) was found, $F(2, 133) = 7.91$, $p = .001$, $\eta^2 = .11$. To determine where the significance was located among the three groups, a Tukey post hoc test was conducted and revealed one significant difference between the

active and *passive supporters* at a .05 level ($p < .001$); the *active supporters* (M = 6.03, SD = 1.00) had a higher mean source credibility score than the *passive supporters* (M = 5.25, SD = 1.06), statistical power = .95.

(2) In the schizophrenia group, Levene's test was not significant ($p > .05$). A significant difference in source credibility scores was found among four audience segments (*stigmatizers*, *stigmatized*, *active supporters*, and *passive supporters*), $F(3, 125) = 3.67$, $p = .014$, $\eta^2 = .08$. To determine where the significance was located among these groups, a Tukey post hoc test was conducted and revealed a significant difference between the audience segments at a .05 level ($p = .021$); the *active supporters* (M = 6.13, SD = .73) had a higher mean source credibility score than the *passive supporters* (M = 5.56, SD = 1.01), statistical power = .88.

RQ2c sought to explore how different types of audience segments (*stigmatizers*, *stigmatized*, *active supporters*, and *passive supporters*) would influence participants' message credibility perception. Analyses of variance (ANOVAs) showed that:

(1) In the depression group, the *p*-value for the Levene's test was not significant ($p > .05$), confirming equal variance. A significant difference in message credibility scores among three audience segments (*stigmatized*, *active supporters*, and *passive supporters*) was found, $F(2, 133) = 10.02$, $p <.001$, $\eta^2 = .14$. To determine where the significance was located among the three groups, a Tukey post hoc test was conducted and revealed one significant difference between the *active* and *passive supporters* at a .05 level ($p < .001$); the *active supporters* (M = 6.23, SD = .88) had a higher mean message credibility score than the *passive supporters* (M = 5.38, SD = 1.06), statistical power = .99.

(2) In the schizophrenia group, Levene's test was not significant ($p > .05$). A significant difference in message credibility scores was found among four audience segments (*stigmatizers*,

stigmatized, *active supporters*, and *passive supporters*), F(3, 126) = 4.08, p =.008, η^2 = .09. To determine where the significance was located among these groups, a Tukey post hoc test was conducted and revealed a significant difference between the *active* and *passive supporters* at a .05 level (p = .006); the *active supporters* (M = 6.35, SD = .71) had a higher mean message credibility score than the *passive supporters* (M = 5.66, SD = 1.05), statistical power = .88.

RQ2d sought to explore how different types of audience segments (*stigmatizers*, *stigmatized*, *active supporters*, and *passive supporters*) would influence participants' intention to "Like" the message. Analyses of variance (ANOVAs) showed that:

(1) In the depression group, the p-value for the Levene's test was not significant ($p > .05$), confirming equal variance. There was a significant difference in intention to "Like" among three audience segments (*stigmatized*, *active supporters*, and *passive supporters*), F(2, 134) = 15.93, $p < .001$, η^2 = .19. To determine where the significance was located among the three groups, a Tukey post hoc test was conducted and revealed one significant difference between the *active* and *passive supporters* at a .05 level (p = .006); the *active supporters* (M = 5.43, SD = 1.91) had a higher intention to "Like" than the *passive supporters* (M = 3.31, SD = 1.89), statistical power = .999.

(2) In the schizophrenia group, Levene's test was not significant ($p > .05$). A significant difference in the intention to "Like" was found among four audience segments (*stigmatizers*, *stigmatized*, *active supporters*, and *passive supporters*), F(3, 126) = 4.11, p = .005, η^2 = .09. To determine where the significance was located among the these groups, a Tukey post hoc test was conducted and revealed a significant difference between the *active* and *passive supporters* at a .05 level (p = .005); the *active supporters* (M = 5.06, SD = 1.90) had a higher intention to "Like" than the *passive supporters* (M = 3.58, SD = 1.88), statistical power = .89.

RQ2e sought to explore how different types of audience segments (*stigmatizers, stigmatized, active supporters*, and *passive supporters*) would influence participants' intention to "Share" the message. Analyses of variance (ANOVAs) showed that:

(1) In the depression group, the *p*-value for the Levene's test was not significant ($p > .05$), confirming equal variance. There was a significant difference in intention to "Share" among three audience segments (*stigmatized, active supporters*, and *passive supporters*), $F(2, 134) = 11.72$, $p < .001$, $\eta^2 = .15$. To determine where the significance was located among the three groups, a Tukey post hoc test was conducted and revealed one significant difference between the *active* and *passive supporters* at a .05 level ($p < .001$); the *active supporters* (M = 5.54, SD = 2.83) had a higher intention to "Share" than the *passive supporters* (M = 3.21, SD = 2.33), statistical power = .99.

(2) In the schizophrenia group, Levene's test was not significant ($p > .05$). A significant difference in the intention to "Share" was found among four audience segments (*stigmatizers, stigmatized, active supporters*, and *passive supporters*), $F(3, 126) = 4.56$, $p = .005$, $\eta^2 = .10$. To determine where the significance was located among these groups, a Tukey post hoc test was conducted and revealed a significant difference between the *active* and *passive supporters* at a .05 level ($p = .003$); the *active supporters* (M = 5.15, SD = 2.77) had a higher intention to "Share" than the *passive supporters* (M = 3.24, SD = 2.38), statistical power = .91.

RQ2f sought to explore how different types of audience segments (*stigmatizers, stigmatized, active supporters*, and *passive supporters*) would influence participants' intention to share the message with others through off-line interactions. Analyses of variance (ANOVAs) showed that:

(1) In the depression group, the *p*-value for the Levene's test was not significant ($p > .05$), confirming equal variance. There was a significant difference in intention to share the message through off-line interactions among three audience segments (*stigmatized, active supporters* and *passive supporters*), $F(2, 134) = 10.43$, $p < .001$, $\eta^2 = .14$. To determine where the significance was located among the three groups, a Tukey post hoc test was conducted and revealed one significant difference between the *active* and *passive supporters* at a .05 level ($p < .001$); the *active supporters* (M = 4.82, SD = 1.99) had a higher intention to share the message through off-line interactions than the *passive supporters* (M = 3.13, SD = 1.68), statistical power = .99.

(2) In the schizophrenia group, Levene's test was not significant ($p > .05$). A significant difference in the intention to share the message through off-line interactions was found among four audience segments (*stigmatizers, stigmatized, active supporters*, and *passive supporters*), $F(3, 128) = 3.26$, $p = .020$, $\eta^2 = .08$. To determine where the significance was located among the four groups, a Tukey post hoc test was conducted and revealed a significant difference between the *active* and *passive supporters* at a .05 level ($p = .023$); the *active supporters* (M = 5.00, SD = 1.64) had a higher intention to share the message through off-line interactions than the *passive supporters* (M = 3.79, SD = 2.03), statistical power = .76.

RQ3: How do posttest attitude toward people with (a) depression and (b) schizophrenia differ by audience segments?

Before answering research questions 3, in order to gain a more comprehensive understanding of the posttest attitude data, the boxplot below (Figure 4.2) shows center and spread of the distribution of posttest attitude data by depression and schizophrenia. It is clear that the posttest attitude data for schizophrenia was more evenly distributed, while the corresponding

data for depression was still highly skewed. Moreover, the Y axis shows the score of posttest stigmatizing attitude; the higher the box, the more negative the attitude is. The box for the schizophrenia group is visibly higher than the box for the depression group. The median, which is a common measure of the mid-point of the data, is represented by the line in the box. The median for the schizophrenia group is visibly higher than the median for the depression group. As a result, after exposure to the anti-stigma messages, the posttest attitude toward schizophrenia is still much more negative than the attitude toward depression.

Figure 4.2 Distribution of posttest attitude

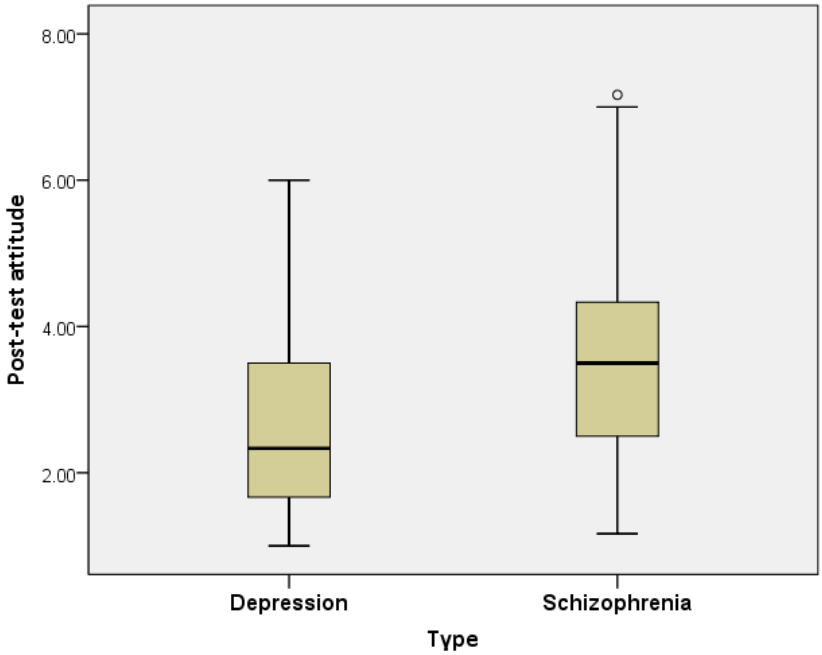
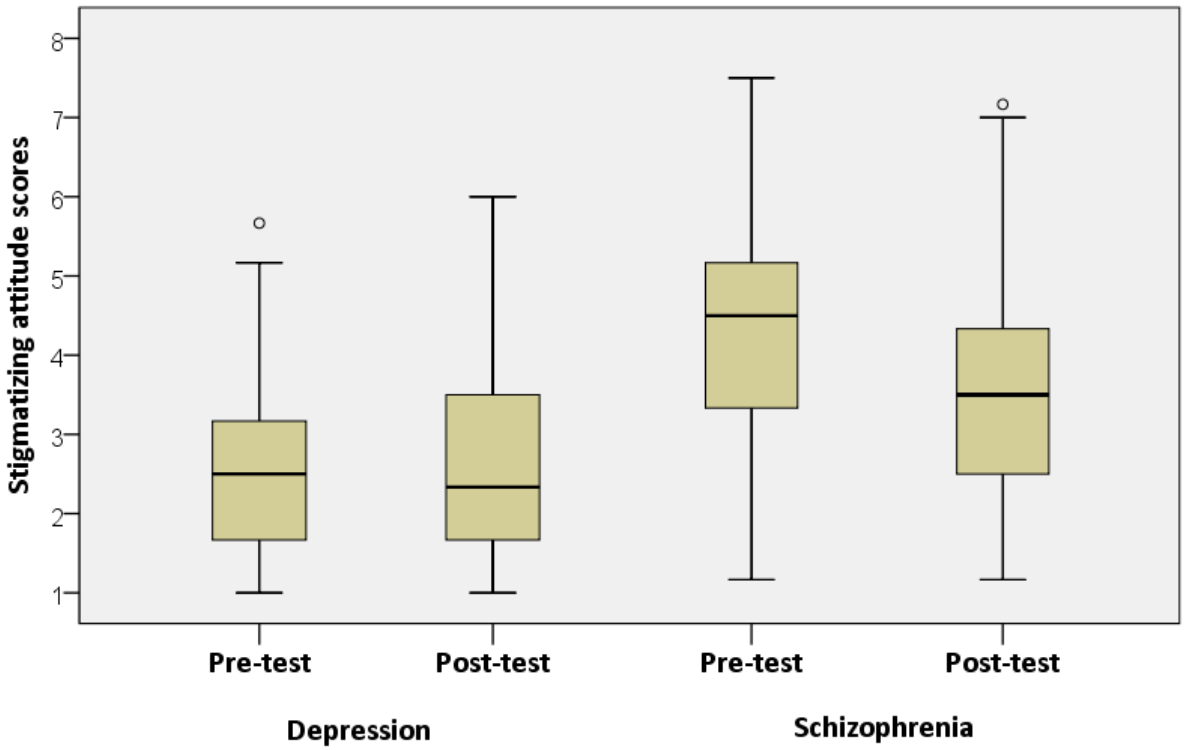


Figure 4.3 below compares center and spread of the distribution of pretest/posttest attitude data by depression and schizophrenia. The pretest/posttest attitude toward depression/schizophrenia shows very different patterns. According to Figure 4.3, the range of attitude data for schizophrenia has been slightly narrowed after exposure, but the range of attitude data for depression has been slightly widened (the higher the attitude score, the more stigmatizing). Moreover, the Y axis shows the score of preexisting stigmatizing attitude; the higher the box, the

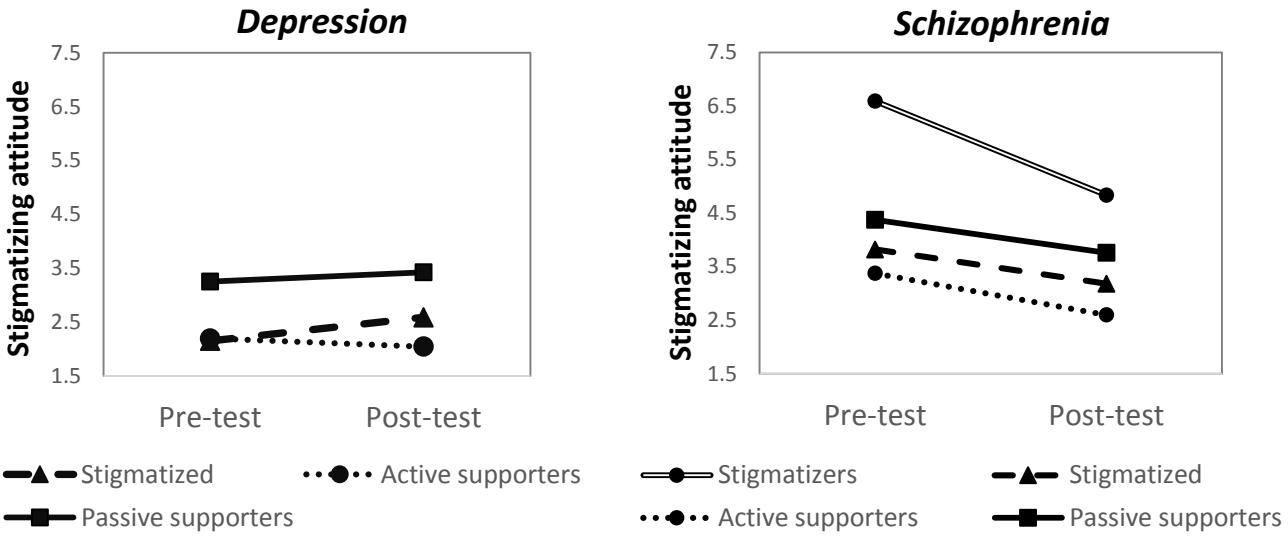
more negative the attitude is. The box for the schizophrenia group is always higher than the box for the depression group. The median, which is a common measure of the mid-point of the data, is represented by the line in the box. The median for the schizophrenia group is always visibly higher than the median for the depression group. In addition, after exposure to anti-stigma messages, the attitude toward depression exhibits less change than the attitude toward schizophrenia.

Figure 4.3 Comparison of pretest/posttest attitude



Based on the above comparisons, the attitude change patterns in depression and schizophrenia by audience segment are shown in Figure 4.4.

Figure 4.4 The impact of audience segment on attitude change



As can be seen from Figure 4.4, the pretest/posttest attitude toward depression did not change much, regardless of the audience segment. In contrast, the pretest/posttest attitude toward schizophrenia displayed some visible changes.

To answer RQ3a, in the depression group, the *p*-value for the Levene's test was significant ($p = .002 < .05$) when performing ANOVA, so a regression was run to predict posttest attitude from audience segments. Audience segment statistically significantly predicted posttest attitude toward depression, $F(1, 133) = 3.990$, $p = .048 < .05$, $R^2 = .029$. The mean posttest attitude score from *passive supporters* was the highest among all three groups ($M = 3.42$, $SD = 1.24$), followed by *stigmatized* ($M = 2.59$, $SD = 1.37$), and the mean posttest attitude score from *active supporters* was the lowest among all three groups ($M = 2.05$, $SD = .87$).

To answer RQ3b, in the schizophrenia group, a regression test found no significant effect of audience segments on posttest attitude, $F(1, 124) = .216$, $p = .643 > .05$, but one-way ANOVA showed a statistically significant difference between groups, $F(3,122) = 14.115$, $p < .001$. Levene's test was not significant ($p > .05$). A Tukey post-hoc test revealed a significant

difference between *active supporters* (M = 2.57, SD = 1.08) and *passive supporters* (M = 3.77, SD = 1.12), $p < .001$; a significant difference between *active supporters* (M = 2.57, SD = 1.08) and *stigmatizers* (M = 4.83, SD = 1.48), $p < .001$; a significant difference between *passive supporters* (M = 3.77, SD = 1.12) and *stigmatizers* (M = 4.83, SD = 1.48), $p = .013$; and a significant difference between *stigmatizers* (M = 4.83, SD = 1.48) and *stigmatized* (M = 3.18, SD = 1.53), $p = .003$. In sum, the mean posttest attitude score from *stigmatizers* was significantly higher than that from other three groups, and the mean posttest attitude score from *passive supporters* was significantly higher than that from *active supporters.*

H2a–H2f: Compared to participants exposed to stigma-reducing messages about schizophrenia, participants exposed to stigma-reducing messages about depression will (a) have more favorable attitudes toward the message; (b) rate the source of the message as more credible; (c) rate the message content as more credible; (d) report higher viral behavioral intentions (VBI) to "Like" the message; (e) report higher viral behavioral intentions (VBI) to "Share" the message; (f) report higher viral behavioral intentions (VBI) to share the message with others through off-line interactions.

H2a–H2f sought to examine the main effect of stigma type. First, descriptive statistics were run to check the normality of the data. The skewness was between -1 and 1 for all dependent variables and the kurtosis was between -1 and 2, suggesting that all dependent variables were normally distributed. To test H2a–H2f, six independent sample t-tests were carried out. All results are presented in Table 4.11 below.

Table 4.11 T-Tests with Stigma Type and Six Dependent Variables

	Variables	t (df)	*p*	Effect size
H2a	IV: stigma type (depression vs. schizophrenia) DV: attitude toward the message	.117 (263)	.907	r=.007
H2b	IV: stigma type (depression vs. schizophrenia) DV: source credibility	-.571 (262)	.568	r=-.035
H2c	IV: stigma type (depression vs. schizophrenia) DV: message credibility	.009 (263)	.993	r=.0005
H2d	IV: stigma type (depression vs. schizophrenia) DV: VBI – "Like"	1.725 (264)	.086	r=.11
H2e	IV: stigma type (depression vs. schizophrenia) DV: VBI – "Share"	2.802* (264)	.005	r=.17
H2f	IV: stigma type (depression vs. schizophrenia) DV: VBI – share the message through off-line interactions	.078 (264)	.938	r=.005

* $p < .01$.

Hypothesis 2a posited that participants exposed to stigma-reducing messages about depression would have more favorable attitudes toward the message than participants exposed to stigma-reducing messages about schizophrenia. The *p*-value for the Levene's test was not significant ($p > .05$), confirming equal variance. An independent samples *t*-test indicated no significant differences existed in message attitude scores between the depression and schizophrenia groups, $M_{depression} = 5.51$, $M_{schizophrenia} = 5.49$, t (263) = .117, $p = .907 > .05$. In other words, the type of stigma does not produce significant differences in a person's attitudes toward the stigma-reducing message. Thus, H2a was not supported.

Hypothesis 2b posited that participants exposed to stigma-reducing messages about depression would rate the source of the message as more credible than participants exposed to stigma-reducing messages about schizophrenia. The *p*-value for the Levene's test was not significant ($p > .05$), confirming equal variance. An independent samples *t*-test indicated no significant differences existed in source credibility scores between the depression and schizophrenia groups, $M_{depression} = 5.72$, $M_{schizophrenia} = 5.80$, t (262) = -.571, $p = .568 > .05$. In

other words, the type of stigma does not produce significant differences in a person's perception of message source credibility. Thus, H2b was not supported.

Hypothesis 2c posited that participants exposed to stigma-reducing messages about depression would rate the message content as more credible than participants exposed to stigma-reducing messages about schizophrenia. The *p*-value for the Levene's test was not significant ($p > .05$), confirming equal variance. An independent samples *t*-test indicated no significant differences existed in message credibility scores between the depression and schizophrenia groups, $M_{depression} = 5.89$, $M_{schizophrenia} = 5.88$, $t\ (263) = .009$, $p = .993 > .05$. In other words, the type of stigma does not produce significant differences in a person's perception of message credibility. Thus, H2c was not supported.

Hypothesis 2d posited that participants exposed to stigma-reducing messages about depression would have higher intention to "Like" the message than participants exposed to stigma-reducing messages about schizophrenia. The *p*-value for the Levene's test was not significant ($p > .05$), confirming equal variance. An independent samples *t*-test indicated no significant differences existed in intentions to "Like" between the depression and schizophrenia groups, $M_{depression} = 4.59$, $M_{schizophrenia} = 4.13$, $t\ (264) = 1.726$, $p = .086 > .05$. In other words, the type of stigma does not produce significant differences in a person's intention to "Like" a stigma-reducing message. Thus, H2d was not supported.

Hypothesis 2e posited that participants exposed to stigma-reducing messages about depression would have higher intention to "Share" the message than participants exposed to stigma-reducing messages about schizophrenia. The *p*-value for the Levene's test was not significant ($p > .05$), confirming equal variance. An independent samples *t*-test found a significant difference in intentions to "Share" between the depression and schizophrenia groups,

t (264) = .049, p = .005, effect size r (264) = .17. Participants who read anti-stigma messages about depression reported higher intentions to "Share" the messages ($M_{depression}$ = 4.76, $SD_{depression}$ = 2.98) than those who read anti-stigma messages about schizophrenia ($M_{schizophrenia}$ = 3.79, $SD_{schizophrenia}$ = 2.65). The type of stigma has an effect on a person's intention to "Share" a stigma-reducing message. Thus, H2e was supported.

Hypothesis 2f posited that participants exposed to stigma-reducing messages about depression would have higher intention to share the message in off-line interactions than participants exposed to stigma-reducing messages about schizophrenia. The p-value for the Levene's test was not significant ($p > .05$), confirming equal variance. An independent samples t-test indicated no significant differences existed in intentions to share the message in off-line interactions between the depression and schizophrenia groups, $M_{depression}$ = 4.11, $M_{schizophrenia}$ = 4.09, t (264) = .078, p = .938 > .05. In other words, the type of stigma does not produce significant differences in a person's intention to share the message in off-line interactions. Thus, H2f was not supported.

H3a–H3f: Compared to participants exposed to negative-toned messages, participants exposed to positive-toned messages will (a) have more favorable attitudes toward the message; (b) rate the source of the message as more credible; (c) rate the message content as more credible; (d) report higher viral behavioral intentions (VBI) to "Like" the message; (e) report higher viral behavioral intentions (VBI) to "Share" the message; (f) report higher viral behavioral intentions (VBI) to share the message with others through off-line interactions.

H3a–H3f sought to examine the main effect of message valence. First, descriptive statistics were run to check the normality of the data. The skewness was between -1 and 1 for all dependent variables and the kurtosis was between -1 and 2, suggesting that all dependent

variables were normally distributed. To test H3a–H3f, six independent sample *t*-tests were carried out. All results are presented in Table 4.12 below.

Table 4.12 T-Tests with Message Valence and Dependent Variables

	Variables	t (df)	*p*	Effect size (r)
H3a	IV: message valence (positive vs. negative) DV: attitude toward the message	.498 (263)	.619	.03
H3b	IV: message valence (positive vs. negative) DV: source credibility	.795 (261)	.427	.05
H3c	IV: message valence (positive vs. negative) DV: message credibility	1.110 (262)	.268	.07
H3d	IV: message valence (positive vs. negative) DV: VBI – "Like"	.311 (263)	.756	.02
H3e	IV: message valence (positive vs. negative) DV: VBI – "Share"	-.971 (263)	.333	.06
H3f	IV: message valence (positive vs. negative) DV: VBI – share the message through off-line interactions	.057 (263)	.955	.004

Hypothesis 3a posited that participants exposed to positive messages would have more favorable attitudes toward the message than participants exposed to negative-toned messages. The *p*-value for the Levene's test was not significant ($p > .05$), confirming equal variance. An independent samples *t*-test indicated no significant differences existed in message attitude scores between the positive and negative messages, $M_{positive} = 5.53$, $M_{negative} = 5.45$, t (263) = .498, $p = .619 > .05$. In other words, the message valence does not produce significant differences in a person's attitudes toward the stigma-reducing message. Thus, H3a was not supported.

Hypothesis 3b posited that participants exposed to positive messages would rate the source of the message as more credible than participants exposed to negative-toned messages. The *p*-value for the Levene's test was not significant ($p > .05$), confirming equal variance. An independent samples *t*-test indicated no significant differences existed in source credibility scores between the positive and negative messages, $M_{positive} = 5.81$, $M_{negative} = 5.71$, t (261)

= .795, p = .427 > .05. In other words, the message valence does not produce significant differences in a person's perception of message source credibility. Thus, H3b was not supported.

Hypothesis 3c posited that participants exposed to positive messages will rate the message as more credible than participants exposed to negative-toned messages. The p-value for the Levene's test was not significant (p > .05), confirming equal variance. An independent samples t-test indicated no significant differences existed in message credibility scores between the positive and negative messages, $M_{positive}$ = 5.95, $M_{negative}$ = 5.81, t (263) = 1.110, p = .268 > .05. In other words, the message valence does not produce significant differences in a person's perception of message credibility. Thus, H3c was not supported.

Hypothesis 3d posited that participants exposed to positive messages would have higher intention to "Like" the message than participants exposed to negative messages. The p-value for the Levene's test was not significant (p > .05), confirming equal variance. An independent samples t-test indicated no significant differences existed in intentions to "Like" between the positive and negative messages, $M_{positive}$ = 4.41, $M_{negative}$ = 4.32, t (263) = .311, p = .756 > .05. In other words, the message valence does not produce significant differences in a person's intention to "Like" a stigma-reducing message. Thus, H3d was not supported.

Hypothesis 3e posited that participants exposed to positive messages would have higher intention to "Share" the message than participants exposed to negative-toned messages. The p-value for the Levene's test was not significant (p > .05), confirming equal variance. An independent samples t-test indicated no significant differences existed in intentions to "Share" between the positive and negative messages, $M_{positive}$ = 4.12, $M_{negative}$ = 4.46, t (263) = -.971, p = .333 > .05. In other words, the message valence does not produce significant differences in a person's intention to "Share" a stigma-reducing message. Thus, H3e was not supported.

Hypothesis 3f posited that participants exposed to positive messages would have higher intention to share the message in off-line interactions than participants exposed to negative-toned messages. The *p*-value for the Levene's test was not significant ($p > .05$), confirming equal variance. An independent samples *t*-test indicated no significant differences existed in intentions to share the message in off-line interactions between the positive and negative messages, $M_{positive} = 4.11$, $M_{negative} = 4.09$, $t(263) = .057$, $p = .955 > .05$. In other words, the message valence of the message does not produce significant differences in a person's intention to share the message in off-line interactions. Thus, H3f was not supported.

H4a–H4f: Compared to participants exposed to low virality messages, participants exposed to high virality messages will (a) have more favorable attitudes toward the message; (b) rate the source of the message as more credible; (c) rate the message content as more credible; (d) report higher viral behavioral intentions (VBI) to "Like" the message; (e) report higher viral behavioral intentions (VBI) to "Share" the message; (f) report higher viral behavioral intentions (VBI) to share the message with others through off-line interactions.

H4a–H4f sought to examine the main effect of virality (viral reach). First, descriptive statistics were run to check the normality of the data. The skewness was between -1 and 1 for all dependent variables and the kurtosis was between -1 and 2, suggesting that all dependent variables were normally distributed. To test H4a–H4f, six independent sample *t*-tests were carried out. All results are presented in Table 4.13 below.

Table 4.13 T-Tests with Virality and Dependent Variables

	Variables	t (df)	*p*	Effect size (r)
H4a	IV: virality (viral reach: high vs. low) DV: attitude toward the message	2.133 (263)	.034	.130
H4b	IV: virality (viral reach: high vs. low) DV: source credibility	.920 (261)	.359	.057
H4c	IV: virality (viral reach: high vs. low) DV: message credibility	1.092 (262)	.276	.067
H4d	IV: virality (viral reach: high vs. low) DV: VBI – "Like"	.224 (263)	.823	.014
H4e	IV: virality (viral reach: high vs. low) DV: VBI – "Share"	-.448 (263)	.655	.028
H4f	IV: virality (viral reach: high vs. low) DV: VBI – share the message through off-line interactions	-.039 (263)	.969	.002

Hypothesis 4a posited that participants exposed to high virality messages would have more favorable attitudes toward the message than participants exposed to low virality messages. The *p*-value for the Levene's test was not significant ($p > .05$), confirming equal variance. An independent samples *t*-test found a significant difference in message attitude scores between the high virality and low virality groups, t (263) = 2.133, $p = .034$, effect size r (263) = .130. Participants reported more positive attitudes toward high virality messages ($M_{\text{high virality}} = 5.66$, $SD_{\text{high virality}} = 1.07$) than low virality messages ($M_{\text{low virality}} = 5.33$, $SD_{\text{low virality}} = 1.37$). In other words, the virality has an effect on a person's attitude toward a stigma-reducing message. Thus, H4a was supported.

Hypothesis 4b posited that participants exposed to high virality messages would rate the source of the message as more credible than participants exposed to low virality messages. The *p*-value for the Levene's test was not significant ($p > .05$), confirming equal variance. An independent samples *t*-test indicated no significant differences existed in source credibility scores between the high virality and low virality messages, $M_{\text{high virality}} = 5.81$, $SD_{\text{high virality}} = .98$,

$M_{low\ virality}$ = 5.71, $SD_{low\ virality}$ = 1.06, t (261) = .920, *p* = .359 > .05. In other words, the virality (viral reach) of the message does not produce significant differences in a person's perception of message source credibility. Thus, H4b was not supported.

Hypothesis 4c posited that participants exposed to high virality messages would rate the message as more credible than participants exposed to low virality messages. The *p*-value for the Levene's test was not significant (*p* > .05), confirming equal variance. An independent samples *t*-test indicated no significant differences existed in message credibility scores between the high virality and low virality messages, $M_{high\ virality}$ = 5.95, $SD_{high\ virality}$ = 1.01, $M_{low\ virality}$ = 5.81, $SD_{low\ virality}$ = 1.05, t (262) = 1.092, *p* = .276 > .05. In other words, the virality (viral reach) of the message does not produce significant differences in a person's perception of message credibility. Thus, H4c was not supported.

Hypothesis 4d posited that participants exposed to high virality messages would have higher intention to "Like" the message than participants exposed to low virality messages. The *p*-value for the Levene's test was not significant (*p* > .05), confirming equal variance. An independent samples *t*-test indicated no significant differences existed in intentions to "Like" between the high virality and low virality messages, $M_{high\ virality}$ = 4.40, $SD_{high\ virality}$ = 2.15, $M_{low\ virality}$ = 4.34, $SD_{low\ virality}$ = 2.19, t (263) = .263, *p* = .823 > .05. In other words, the virality (viral reach) of the message does not produce significant differences in a person's intention to "Like" a stigma-reducing message. Thus, H4d was not supported.

Hypothesis 4e posited that participants exposed to high virality messages would have higher intention to "Share" the message than participants exposed to low virality messages. The *p*-value for the Levene's test was not significant (*p* > .05), confirming equal variance. An independent samples *t*-test indicated no significant differences existed in intentions to "Share"

between the high virality and low virality messages, $M_{high\ virality} = 4.21$, $SD_{high\ virality} = 2.78$, $M_{low\ virality} = 4.37$, $SD_{low\ virality} = 2.94$, t (263) = -.448, $p = .655 > .05$. In other words, the virality (viral reach) of the message does not produce significant differences in a person's intention to "Share" a stigma-reducing message. Thus, H4e was not supported.

Hypothesis 4f posited that participants exposed to high virality messages would have higher intention to share the message in off-line interactions than participants exposed to low virality messages. The *p*-value for the Levene's test was not significant ($p > .05$), confirming equal variance. An independent samples *t*-test indicated no significant differences existed in intentions to share the message in off-line interactions between the high virality and low virality messages, $M_{high\ virality} = 4.10$, $SD_{high\ virality} = 2.05$, $M_{low\ virality} = 4.11$, $SD_{low\ virality} = 2.03$, t (263) = -.039, $p = .969 > .05$. In other words, the virality (viral reach) of the message does not produce significant differences in a person's intention to share the message in off-line interactions. Thus, H4f was not supported.

H5a: Participants exposed to positive-toned messages will show more favorable posttest attitude.

Only the four schizophrenia conditions were analyzed for H5a. Regression procedure was conducted with message valence as the independent variable, preexisting attitude as the covariate variable, and posttest attitude as the dependent variable. Result from the regression analysis showed that message valence was not a significant predictor of posttest attitude toward schizophrenia, $p = .150 > .05$; only preexisting attitude toward schizophrenia statistically significantly predicted posttest attitude, $F(2, 123) = 144.673$, $p < .001$, $R^2 = .542$.

H5b: Participants exposed to high virality messages will show more favorable posttest attitude.

Only the four schizophrenia conditions were analyzed for H5b. Regression procedure was conducted with message virality as the independent variable, preexisting attitude as the covariate

variable, and posttest attitude as the dependent variable. Result from the regression analysis showed that message virality was not a significant predictor of posttest attitude toward schizophrenia, $p = .149 > .05$; only preexisting attitude toward schizophrenia statistically significantly predicted posttest attitude, $F(2, 123) = 139.540$, $p < .001$, $R^2 = .534$. H5a and H5b were not supported.

RQ4: How will the interactions among audience segment, message valence, and virality affect (a) attitudes toward the message; (b) perception of source credibility; (c) perception of message credibility; (d) viral behavioral intentions (VBI) to "Like" the message; (e) viral behavioral intentions (VBI) to "Share" the message; (f) viral behavioral intentions (VBI) to share the message with others through off-line interactions?

Research question 4a–4f queried the main effects and interactions of three categorical variables. First, descriptive statistics were run to check the normality of the continuous variables. The skewness was between -1 and 1 for all six dependent variables and the kurtosis was between -1 and 2. These data were considered normal. A series of 4 (audience segment) × 2 (valence) × 2 (virality) Factorial ANOVA tests with dependent variables were conducted in the depression and schizophrenia groups separately.

1. In the four depression conditions

To answer RQ4a, a 3 (audience segment) × 2 (valence) × 2 (virality) Factorial ANOVA only revealed a main effect of audience segment, $F(2, 135) = 4.61$, $p = .012$, $\eta^2 = .07$, statistical power = .77. The *p*-value for the Levene's test was not significant ($p = .236 > .05$), confirming equal variance. Post hoc Tukey tests on audience segment revealed a significant difference between the *active* and *passive supporters* at a .05 level ($p = .006$); the *active supporters* (M = 5.84, SD = 1.09) reported more positive attitudes toward the message than the *passive supporters*

(M = 5.03, SD = 1.46), consistent with the finding in RQ2a. None of the main effects of valence [F(1, 135) = 1.56, *p* = .70], viral reach [F(1, 135) = 2.11, *p* = .15], nor the interactions was significant. Therefore, only the main effect of audience segment was significant in the Factorial ANOVA test of attitude toward message, answering RQ4a.

To answer RQ4b, a 3 (audience segment) × 2 (valence) × 2 (virality) Factorial ANOVA only revealed a main effect of audience segment, F(2, 135) = 6.48, *p* = .002, η^2 = .10, statistical power = .9 The *p*-value for the Levene's test was not significant (*p* = .522 > .05), confirming equal variance. Post hoc Tukey tests on audience segment revealed a significant difference between the *active* and *passive supporters* at a .05 level (*p* < .001); the *active supporters* (M = 6.03, SD = 1.00) reported higher perception of the source credibility than the *passive supporters* (M = 5.25, SD = 1.06), consistent with the finding in RQ2b. None of the main effects of valence [F(1, 135) = 2.10, *p* = .15], viral reach [F(1, 135) = .026, *p* = .87], nor the interactions was significant. Therefore, only the main effect of audience segment was significant in the Factorial ANOVA test of perception of source credibility, answering RQ4b.

To answer RQ4c, a 3 (audience segment) × 2 (valence) × 2 (virality) Factorial ANOVA only revealed a main effect of audience segment, F(3, 135) = 9.374, *p* < .001, η^2 = .13, statistical power = .976. The *p*-value for the Levene's test was not significant (*p* = .201 > .05), confirming equal variance. Post hoc Tukey tests on audience segment revealed a significant difference between the *active* and *passive supporters* at a .05 level (*p* < .001); the *active supporters* (M = 6.23, SD = .87) reported a higher perception of message credibility than the *passive supporters* (M = 5.38, SD = 1.06), consistent with the finding in RQ2c. None of the main effects of valence [F(1, 135) = 1.05, *p* = .31], viral reach [F(1, 135) = .20, *p* = .889], nor the interactions was

significant. Therefore, only the main effect of audience segment was significant in the Factorial ANOVA test of perception of message credibility, answering RQ4c.

To answer RQ4d, a 3 (audience segment) × 2 (valence) × 2 (virality) Factorial ANOVA only revealed a main effect of audience segment, $F(2, 135) = 15.44$, $p < .001$, $\eta^2 = .20$, statistical power = .999. The *p*-value for the Levene's test was not significant ($p = .854 > .05$), confirming equal variance. Post hoc Tukey tests on audience segment revealed a significant difference between the active and passive supporters at a .05 level ($p < .001$); the *active supporters* (M = 5.43, SD = 1.91) reported higher intentions to "Like" the message than the *passive supporters* (M = 3.31, SD = 1.89), consistent with the finding in RQ2d. None of the main effects of valence [$F(1, 135) = .06$, $p = .81$], viral reach [$F(1, 135) = .183$, $p = .67$], nor the interactions was significant. Therefore, only the main effect of audience segment was significant in the Factorial ANOVA test of intention to "Like" the message, answering RQ4d.

To answer RQ4e, a 3 (audience segment) × 2 (valence) × 2 (virality) Factorial ANOVA only revealed a main effect of audience segment, $F(2, 135) = 12.29$, $p < .001$, $\eta^2 = .17$, statistical power = .995. The *p*-value for the Levene's test was not significant ($p = .122 > .05$), confirming equal variance. Post hoc Tukey tests on audience segment revealed a significant difference between the *active* and *passive supporters* at a .05 level ($p < .001$); the *active supporters* (M = 5.54, SD = 2.83) reported higher intentions to "Share" the message than the *passive supporters* (M = 3.21, SD = 2.33), consistent with the finding in RQ2e. None of the main effects of valence [$F(1, 135) = .61$, $p = .44$], viral reach [$F(1, 135) = .02$, $p = .88$], nor the interactions was significant. Therefore, only the main effect of audience segment was significant in the Factorial ANOVA test of intention to "Share" the message, answering RQ4e.

To answer RQ4f, a 3 (audience segment) × 2 (valence) × 2 (virality) Factorial ANOVA only revealed a main effect of audience segment, $F(2, 135) = 10.40$, $p < .001$, $\eta^2 = .15$, statistical power = .986. The *p*-value for the Levene's test was not significant ($p = .382 > .05$), confirming equal variance. Post hoc Tukey tests on audience segment revealed a significant difference between the *active* and *passive supporters* at a .05 level ($p < .001$); the *active supporters* (M = 4.82, SD = 1.99) reported higher intentions to share the message through off-line interactions than the *passive supporters* (M = 3.13, SD = 1.68), consistent with the finding in RQ2f. None of the main effects of valence [$F(1, 135) = .19$, $p = .67$], viral reach [$F(1, 135) = .45$, $p = .50$], nor the interactions was significant. Therefore, only the main effect of audience segment was significant in the Factorial ANOVA test of intention to share the message through off-line interactions, answering RQ4f.

2. In the four schizophrenia conditions:

To answer RQ4a, a 4 (audience segment) × 2 (message valence) × 2 (virality) Factorial ANOVA only revealed a main effect of audience segment, $F(3, 114) = 4.933$, $p = .003$, $\eta^2 = .12$, statistical power = .903. The *p*-value for the Levene's test was not significant ($p = .377 > .05$), confirming equal variance. Post hoc Tukey tests on audience segment revealed a significant difference between the *active* and *passive supporters* at a .05 level ($p = .004$); the *active supporters* (M = 6.03, SD = .89) reported more positive attitudes toward the message than the *passive supporters* (M = 5.23, SD = 1.05), consistent with the finding in RQ2a. None of the main effects of valence [$F(1, 114) = 1.20$, $p = .28$], viral reach [$F(1, 114) = 1.03$, $p = .31$], nor the interactions was significant. Therefore, only the main effect of audience segment was significant in the Factorial ANOVA test of attitude toward message, answering RQ4a.

To answer RQ4b, a 4 (audience segment) × 2 (valence) × 2 (virality) Factorial ANOVA only revealed a main effect of audience segment, $F(3, 113) = 3.38$, $p = .021$, $\eta^2 = .08$, statistical power = .75. The *p*-value for the Levene's test was not significant ($p = .545 > .05$), confirming equal variance. Post hoc Tukey tests on audience segment revealed a significant difference between the *active* and *passive supporters* at a .05 level ($p = .030$); the *active supporters* (M = 6.13, SD = .73) reported higher perception of the source credibility than the *passive supporters* (M = 5.56, SD = 1.01), consistent with the finding in RQ2b. None of the main effects of valence [$F(1, 113) = .07$, $p = .794$], viral reach [$F(1, 113) = .013$, $p = .91$], nor the interactions was significant. Therefore, only the main effect of audience segment was significant in the Factorial ANOVA test of perception of the source credibility, answering RQ4b.

To answer RQ4c, a 4 (audience segment) × 2 (valence) × 2 (virality) Factorial ANOVA only revealed a main effect of audience segment, $F(3, 129) = 4.53$, $p = .005$, $\eta^2 = .11$, statistical power = .874. The *p*-value for the Levene's test was not significant ($p = .054 > .05$), confirming equal variance. Post hoc Tukey tests on audience segment revealed a significant difference between the *active* and *passive supporters* at a .05 level ($p = .007$); the *active supporters* (M = 6.33, SD = .73) reported a higher perception of message credibility than the *passive supporters* (M = 5.66, SD = 1.07), consistent with the finding in RQ2c. None of the main effects of valence [$F(1, 130) = .74$, $p = .39$], viral reach [$F(1, 129) = .80$, $p = .37$], nor the interactions was significant. Therefore, only the main effect of audience segment was significant in the Factorial ANOVA test of perception of message credibility, answering RQ4c.

To answer RQ4d, a 4 (audience segment) × 2 (valence) × 2 (virality) Factorial ANOVA only revealed a main effect of audience segment, $F(3, 114) = 3.56$, $p = .016$, $\eta^2 = .09$, statistical power = .78. The *p*-value for the Levene's test was not significant ($p = .051 > .05$), confirming

equal variance. Post hoc Tukey tests on audience segment revealed a significant difference between the *active* and *passive supporters* at a .05 level (p = .006); the *active supporters* (M = 5.06, SD = 1.90) reported higher intentions to "Like" the message than the *passive supporters* (M = 3.58, SD = 1.88), consistent with the finding in RQ2d. None of the main effects of valence [F(1, 114) = .17, p = .68], viral reach [F(1, 114) = .35, p = .56], nor the interactions was significant. Therefore, only the main effect of audience segment was significant in the Factorial ANOVA test of intention to "Like" the message, answering RQ4d.

To answer RQ4e, a 4 (audience segment) × 2 (valence) × 2 (virality) Factorial ANOVA only revealed a main effect of audience segment, F(3, 114) = 3.35, p = .02, η^2 = .08, statistical power = .75. The p-value for the Levene's test was not significant (p = .122 > .05), confirming equal variance. Post hoc Tukey tests on audience segment revealed a significant difference between the *active* and *passive supporters* at a .05 level (p = .005); the *active supporters* (M = 5.15, SD = 2.77) reported higher intentions to "Share" the message than the *passive supporters* (M = 3.24, SD = 2.39), consistent with the finding in RQ2e. None of the main effects of valence [F(1, 114) = .49, p = .49], viral reach [F(1, 114) = .13, p = .72], nor the interactions was significant. Therefore, only the main effect of audience segment was significant in the Factorial ANOVA test of intention to "Share" the message, answering RQ4e.

To answer RQ4f, a 4 (audience segment) × 2 (valence) × 2 (virality) Factorial ANOVA only revealed a main effect of audience segment, F(3, 114) = 2.60, p = .05, η^2 = .06, statistical power = .63. The p-value for the Levene's test was not significant (p = .120 > .05), confirming equal variance. Post hoc Tukey tests on audience segment revealed a significant difference between the *active* and *passive supporters* at a .05 level (p = .026); the *active supporters* (M = 5.00, SD = 1.64) reported higher intentions to share the message through off-line interactions

than the *passive supporters* (M = 3.79, SD = 2.03), consistent with the finding in RQ2f. None of the main effects of valence [F(1, 114) = .54, *p* = .46], viral reach [F(1, 114) = .89, *p* = .35], nor the interactions was significant. Therefore, only the main effect of audience segment was significant in the Factorial ANOVA test of intention to share the message through off-line interactions, answering RQ4f.

H6: There will be a positive correlation between: (a) attitudes toward the message and viral behavioral intentions (VBI); (b) perception of source credibility and viral behavioral intentions (VBI); (c) perception of message credibility and viral behavioral intentions (VBI).

H6a–H6c posited that there would be positive correlations between message evaluation variables and viral behavioral intentions (VBI), suggesting that the more positive attitudes people have toward the message, or the higher the perception of credibility, the more likely they are to show "small acts of engagement" (Abroms & Craig Lefebvre, 2009, p. 420). Since the skewness was between -1 and 1 for all variables and the kurtosis was between -1 and 2, Pearson correlation was utilized. All results are showcased in Table 4.14 below.

Table 4.14 Correlations between Message Evaluation and Viral Behavioral Intentions (VBI)

	Correlations	Depression	Schizophrenia
H6a	There will be a positive correlation between attitudes toward the message and intention to:		
	• "Like"	r= .676*	r= .538*
	• "Share"	r= .555*	r= .439*
	• share the message through off-line interactions	r= .567*	r= .477*
H6b	There will be a positive correlation between perception of source credibility and intention to:		
	• "Like"	r= .519*	r= .424*
	• "Share"	r= .443*	r= .338*
	• share the message through off-line interactions	r= .442*	r= .289*
H6c	There will be a positive correlation between perception of message credibility and intention to:		
	• "Like"	r= .611*	r= .451*
	• "Share"	r= .523*	r= .378*
	• share the message through off-line interactions	r= .496*	r= .340*

* $p < .001$

H6a posited that there would be positive correlations between attitudes toward the message and viral behavioral intentions (VBI). The Pearson correlation found a significant relationship between attitude toward the message and likelihood to "Like" the message in both the depression and schizophrenia groups, $r_{depression}$ (135) = .676, $p < .001$; $r_{schizophrenia}$ (130) = .538, $p < .001$. Similarly, there was a significant relationship between attitude toward the message and likelihood to "Share" the message, $r_{depression}$ (135) = .555, $p < .001$; $r_{schizophrenia}$ (130) = .439, $p < .001$. Finally, there was a significant relationship between attitude toward the message and likelihood to share the message with others through off-line interactions, $r_{depression}$ (135) = .567, $p < .001$; $r_{schizophrenia}$ (130) = .477, $p < .001$. H6a was supported.

H6b posited that there would be positive correlations between perception of source credibility and viral behavioral intentions (VBI). The Pearson correlation found a significant relationship between perception of source credibility and likelihood to "Like" the message in both the depression and schizophrenia groups, $r_{depression}$ (135) = .519, $p < .001$; $r_{schizophrenia}$ (129) = .424, $p < .001$. Similarly, there was a significant relationship between perception of source credibility and likelihood to "Share" the message, $r_{depression}$ (135) = .443, $p < .001$; $r_{schizophrenia}$ (129) = .338, $p < .001$. Finally, there was a significant relationship between perception of source credibility and likelihood to share the message with others through off-line interactions, $r_{depression}$ (135) = .442, $p < .001$; $r_{schizophrenia}$ (129) = .289, $p < .001$. H6b was supported.

H6c posited that there would be positive correlations between perception of message credibility and viral behavioral intentions (VBI). The Pearson correlation found a significant relationship between perception of message credibility and likelihood to "Like" the message in both the depression and schizophrenia groups, $r_{depression}$ (135) = .611, $p < .001$; $r_{schizophrenia}$ (130) = .451, $p < .001$. Similarly, there was a significant relationship between perception of message

credibility and likelihood to "Share" the message, $r_{depression}$ (135) = .523, $p < .001$; $r_{schizophrenia}$ (130) = .378, $p < .001$. Finally, there was a significant relationship between perception of message credibility and likelihood to share the message with others through off-line interactions, $r_{depression}$ (135) = .486, $p < .001$; $r_{schizophrenia}$ (130) = .340, $p < .001$. H6c was supported.

To confirm the effects found in H6a-H6c, multiple regressions were conducted using attitudes toward the message, perception of source credibility, and perception of message credibility as independent variables, and viral behavioral intention items (VBIs) as the dependent variable. Results showed that:

(1) Attitudes toward the message and judgments of credibility statistically significantly predicted likelihood to "Like" the message, $F(3, 258) = 58.030$, $p < .001$, $R^2 = .403$.

(2) Attitudes toward the message and judgments of credibility statistically significantly predicted likelihood to "Share" the message, $F(3, 258) = 32.779$, $p < .001$, $R^2 = .276$.

(3) Attitudes toward the message and judgments of credibility statistically significantly predicted likelihood to share the message with others through off-line interactions, $F(3, 258) = 34.165$, $p < .001$, $R^2 = .284$.

Table 4.15 Summary of Major Findings

	Research Question/Hypothesis	Variables	Statistics	Finding
RQ1a	How many audience segments exist with regard to the stigma toward depression?	preexisting attitude, perceived stigmatization, helping intention	descriptive	three (*stigmatized*, *active supporters* & *passive supporters*)
RQ1b	How many audience segments exist with regard to the stigma toward schizophrenia?	preexisting attitude, perceived stigmatization, helping intention	descriptive	four (*stigmatizers*, *stigmatized*, *active supporters*, &

				passive supporters)
H1	Preexisting attitudes toward depression would be significantly more positive than preexisting attitudes toward schizophrenia	IV: stigma type DV: preexisting attitude	T-test	Supported
Testing covariate	whether there were differences in covariate scores (involvement and perceived public stigma) between manipulated groups		factorial ANOVAs	Not significant
RQ2a	How do the audience segments influence attitudes toward the message?	IV: audience segments DV: attitude toward the message	one-way ANOVA	*active supporters* > *passive supporters* (both groups)
RQ2b	How do the audience segments influence perception of source credibility?	IV: audience segments DV: source credibility	one-way ANOVA	*active supporters* > *passive supporters* (both groups)
RQ2c	How do the audience segments influence perception of message credibility?	IV: audience segments DV: message credibility	one-way ANOVA	*active supporters* > *passive supporters* (both groups)
RQ2d	How do the audience segments influence viral behavioral intentions (VBI) to "Like" the message?	IV: audience segments DV: Intention – "Like"	one-way ANOVA	*active supporters* > *passive supporters* (both groups)
RQ2e	How do the audience segments influence viral behavioral intentions (VBI) to "Share" the message?	IV: audience segments DV: Intention – "Share"	one-way ANOVA	*active supporters* > *passive supporters* (both groups)
RQ2f	How do the audience segments influence viral behavioral intentions (VBI) to share the message with others through off-line interactions?	IV: audience segments DV: Intention – share the message through off-line interactions	one-way ANOVA	*active supporters* > *passive supporters* (both groups)

RQ3a	How do posttest attitude toward people with depression differ by audience segments?	IV: audience segments DV: posttest attitude	one-way ANOVA & Regression	*passive supporters* > *stigmatized, active supporters*
RQ3b	How do posttest attitude toward people with schizophrenia differ by audience segments?	IV: audience segments DV: posttest attitude	one-way ANOVA & Regression	*stigmatizers* > *stigmatized, passive supporters, active supporters*
H2a	Participants exposed to stigma-reducing messages about depression will have more favorable attitudes toward the message	IV: stigma type (depression vs. schizophrenia) DV: attitude toward the message	T-test	Not supported
H2b	Participants exposed to stigma-reducing messages about depression will rate the source of the message as more credible	IV: stigma type (depression vs. schizophrenia) DV: source credibility	T-test	Not supported
H2c	Participants exposed to stigma-reducing messages about depression will rate the message content as more credible	IV: stigma type (depression vs. schizophrenia) DV: message credibility	T-test	Not supported
H2d	Participants exposed to stigma-reducing messages about depression will report higher viral behavioral intentions (VBI) to "Like" the message	IV: stigma type (depression vs. schizophrenia) DV: VBI – "Like"	T-test	Not supported
H2e	Participants exposed to stigma-reducing messages about depression will report higher viral behavioral intentions (VBI) to "Share" the message	IV: stigma type (depression vs. schizophrenia) DV: VBI – "Share"	T-test	Supported
H2f	Participants exposed to stigma-reducing messages about depression will report higher viral behavioral intentions (VBI) to share the	IV: stigma type (depression vs. schizophrenia) DV: VBI – share the message	T-test	Not supported

	message with others through off-line interactions	through off-line interactions		
H3a	Participants exposed to positive-toned messages will have more favorable attitudes toward the message	IV: message valence (positive vs. negative) DV: attitude toward the message	T-test	Not supported
H3b	Participants exposed to positive-toned messages will rate the source of the message as more credible	IV: message valence (positive vs. negative) DV: source credibility	T-test	Not supported
H3c	Participants exposed to positive-toned messages will rate the message content as more credible	IV: message valence (positive vs. negative) DV: message credibility	T-test	Not supported
H3d	Participants exposed to positive-toned messages will report higher viral behavioral intentions (VBI) to "Like" the message	IV: message valence (positive vs. negative) DV: VBI – "Like"	T-test	Not supported
H3e	Participants exposed to positive-toned messages will report higher viral behavioral intentions (VBI) to "Share" the message	IV: message valence (positive vs. negative) DV: VBI – "Share"	T-test	Not supported
H3f	Participants exposed to positive-toned messages will report higher viral behavioral intentions (VBI) to share the message with others through off-line interactions	IV: message valence (positive vs. negative) DV: VBI – share the message through off-line interactions	T-test	Not supported
H4a	Participants exposed to high virality messages will have more favorable attitudes toward the message	IV: virality (viral reach: high vs. low)	T-test	Supported

		DV: attitude toward the message		
H4b	Participants exposed to high virality messages will rate the source of the message as more credible	IV: virality (viral reach: high vs. low) DV: source credibility	T-test	Not supported
H4c	Participants exposed to high virality messages will rate the message content as more credible	IV: virality (viral reach: high vs. low) DV: message credibility	T-test	Not supported
H4d	Participants exposed to high virality messages will report higher viral behavioral intentions (VBI) to "Like" the message	IV: virality (viral reach: high vs. low) DV: VBI – "Like"	T-test	Not supported
H4e	Participants exposed to high virality messages will report higher viral behavioral intentions (VBI) to "Share" the message	IV: virality (viral reach: high vs. low) DV: VBI – "Share"	T-test	Not supported
H4f	Participants exposed to high virality messages will report higher viral behavioral intentions (VBI) to share the message with others through off-line interactions	IV: virality (viral reach: high vs. low) DV: VBI – share the message through off-line interactions	T-test	Not supported
H5a	Participants exposed to positive-toned messages will show more favorable posttest attitude.	IV: message valence (positive vs. negative) DV: posttest attitude	Regression	Not supported
H5b	Participants exposed to high virality messages will show more favorable posttest attitude.	IV: virality (viral reach: high vs. low) DV: posttest attitude	Regression	Not supported
RQ4a	How will the interactions among audience segment, valence, and virality affect attitudes toward the message?	IV: audience segment × valence × virality	Factorial ANOVA	No significant interaction effect

		DV: attitude toward the message		
RQ4b	How will the interactions among audience segment, valence, and virality affect perception of source credibility?	IV: audience segment × valence × virality DV: source credibility	Factorial ANOVA	No significant interaction effect
RQ4c	How will the interactions among audience segment, valence, and virality affect perception of message credibility?	IV: audience segment × valence × virality DV: message credibility	Factorial ANOVA	No significant interaction effect
RQ4d	How will the interactions among audience segment, valence, and virality affect viral behavioral intentions (VBI) to "Like" the message?	IV: audience segment × valence × virality DV: VBI – "Like"	Factorial ANOVA	No significant interaction effect
RQ4e	How will the interactions among audience segment, valence, and virality affect viral behavioral intentions (VBI) to "Share" the message?	IV: audience segment × valence × virality DV: VBI – "Share"	Factorial ANOVA	No significant interaction effect
RQ4f	How will the interactions among audience segment, valence, and virality affect viral behavioral intentions (VBI) to share the message with others through off-line interactions?	IV: audience segment × valence × virality DV: VBI – share the message through off-line interactions	Factorial ANOVA	No significant interaction effect
H6a	There will be a positive correlation between attitudes toward the message and viral behavioral intentions (VBI)	IV: attitudes toward the message DV: viral behavioral intentions (VBI)	Pearson Correlation	Supported
H6b	There will be a positive correlation between perception of source	IV: perception of source credibility	Pearson Correlation	Supported

	credibility and viral behavioral intentions (VBI)	DV: viral behavioral intentions (VBI)		
H6c	There will be a positive correlation between perception of message credibility and viral behavioral intentions (VBI)	IV: perception of message credibility DV: viral behavioral intentions (VBI)	Pearson Correlation	Supported
H6a-H6c	An overall test of the relationship between attitudes toward the message, perception of source credibility, perception of message credibility and viral behavioral intentions (VBI)	IV: attitudes toward the message, perception of source credibility, perception of message credibility DV: viral behavioral intentions (VBI)	Multiple Regression	Supported

CHAPTER 5

DISCUSSION

Mental illness stigma is a well-documented phenomenon, but few studies have investigated how communication outcomes of stigma-reducing information would differ by type of disorder or type of audience. Tearing down stigmas is essential for improving the quality of life of people with severe mental illness (Corrigan & Kosyluk, 2013; Corrigan & Penn, 1999), and more in-depth research in this area can provide the foundation for effective intervention design (Corrigan & Kosyluk, 2013).

This aim of this study was to investigate and compare the impact of social media-delivered anti-stigma messages about two types of mental illnesses: depression and schizophrenia. Particularly, this study has made the following contributions: First, it provided further empirical evidence about Goffman's (1963) and Smith's (2012) taxonomy of audience categories. It also revealed the effects of the audience characteristics during the persuasion process. Next, it investigated the effectiveness of anti-stigma messages on the stigma associated with different types of disorders. Furthermore, it looked at the role of emotional appeal (message valence) and virality (viral reach) in educational anti-stigma messages. Finally, this study added to the body of anti-stigma research by introducing a social media-based behavioral variable, "viral behavioral intentions," which refers to people's willingness to "Like" a message, to "Share" the message with online friends, and to share the information in the message with a friend in off-line settings. It can also be viewed as an attempt to answer recent calls for research

on the role of social media in promoting public health goals (Newbold & Campos, 2011; Schein, Wilson, & Keelen, 2010).

This chapter examines the main findings of the study and discusses limitations and further research challenges. First, the findings are summarized below according to the results of the various research questions and hypotheses. Second, theoretical and practical implications are discussed. Finally, this chapter addresses the limitations of this study, providing directions for future research, and concludes with a brief discussion.

Summary of Results

This dissertation yielded many interesting results from the research questions and hypotheses. The first aim of this study was to explore whether there are differences between people's attitudes toward depression/schizophrenia (H1), and how many audience segments exist with regard to the stigma toward depression and schizophrenia (RQ1). Results showed that among the 265 participants used for this analysis, only three audience segments exist with regard to the stigma toward depression (*stigmatized, active supporters,* and *passive supporters*), whereas four audience segments exist with regard to the stigma toward schizophrenia (*stigmatizers, stigmatized, active supporters,* and *passive supporters*). Although care should be taken in evaluating this result due to the modest sample size ($N_{depression}$= 135, $N_{schizophrenia}$ =130), at least it shows a tendency that schizophrenia is still more heavily stigmatized by the public. This finding also aligns with Vahabzadeh et al.'s (2011) finding that, during the past decade, there was no significant improvement in the usage of stigmatizing labels in U.S. media coverage of schizophrenia. Besides the *stigmatizers* and the *stigmatized*, the rest of the general public could be divided into *active supporters* and *passive supporters* on a stigma-relevant topic. More *supporters* were found regarding depression, while all the *stigmatizers* were found regarding

schizophrenia. Results from a series of *t*-tests confirmed that participants showed significantly more stigmatizing attitudes toward schizophrenia than toward depression. Participants rated people with schizophrenia as more dangerous and fearful than people with depression, they were more likely to say that schizophrenia made them feel angry, they felt more likely to avoid people with schizophrenia, and these participants felt more likely to help people with depression than people with schizophrenia (in all cases, $p < .001$). Thus, the first main finding is that 16 years after the 1999 report by the United States Department of Health and Human Services, schizophrenia is still being more heavily stigmatized than other mental illnesses such as depression.

The current study also sought to better understand how the audience segments affect attitudes toward the message, evaluations of source/message credibility, and viral behavioral intentions (VBI) (RQ2a–RQ2f). Results showed that for both depression and schizophrenia, the only significant difference across audience segments was between *active supporters* and *passive supporters*. The main difference between the definition of *active supporters* and *passive supporters* is that *active supporters* are more motivated and have higher intention to help the stigmatized. Both groups hold non-negative attitudes toward mental illness to begin with; but after being exposed to anti-stigma messages, *active supporters* had more favorable attitudes toward the message, rated the source/content of the message as more credible, and reported higher viral behavioral intentions (VBI) to Like and Share (both online/off-line) the message. This difference is important because it may provide insights for future research and practice. Given the fact that *active supporters* and *passive supporters* constituted the majority of participants in this study, the findings from RQ2a–RQ2f suggest that in order to eradicate illness-related stigma, future efforts should not only target those *stigmatizers* who hold negative

preliminary attitudes, but also the *passive supporters* who hold positive or neutral attitudes but are less motivated.

In terms of the impact of audience segments on posttest attitude toward depression, on the whole, the pretest/posttest attitude toward depression did not change much, a finding consistent with previous research which found that exposure to a brief social media campaign about depression stigma cannot successfully change people's attitudes (Livingston et al., 2013). However, Livingston and colleagues (2013) did not take audience characteristics into consideration. The Figure 4.4 showed that attitudes toward depression are not easy to change with a brief educational intervention, but when it comes to attitude toward schizophrenia, the desired attitude change was more visible, especially among *stigmatizers*. As summarized by Clement et al. (2013), previous research on media interventions for reducing mental illness stigma usually found small-to-medium effect sizes for attitude change. This study suggested that anti-stigma messages about less well-known illnesses (such as schizophrenia) might be more effective than messages about well-known illnesses (such as depression).

It was also interesting to find that participants who read anti-stigma messages about depression reported higher intentions to "Share" the messages (H2e). This finding again supported the notion that depression sounds more socially acceptable than schizophrenia. The behavior of "Share" is actually posting a link on an individual's Facebook timeline, in groups, or to their friends, which means other people in the individual's social network will know what their friend is interested in. Thus, this finding is not surprising, given that participants consistently reported more negative and stigmatizing attitudes toward schizophrenia than depression. The main effect of audience segment was confirmed again in RQ4a–RQ4f.

The experiment also explored the impact of message valence on social media-delivered anti-stigma messages. Results showed that message valence had no significant effect on all the dependent variables (H3a–H3f). On the surface, such a finding is relatively inconsistent with previous studies which suggested that either negative claims are more effective in changing attitudes (Lang, 2006b; Nan & Madden, 2012) or positive messages are more powerful (Gallagher & Updegraff, 2012; Rothman et al. 2006), but it supports a recent meta-analytic review that gain- and loss-framed appeals do not significantly differ in persuasiveness concerning health education messages (O'Keefe & Nan, 2012). There might be at least three plausible explanations. The first explanation is that the text-based, purely educational stimuli used in this study were not emotionally arousing enough. From the theoretical perspective of the limited capacity model of motivated mediated message processing (LC4MP; Lang, 2006a, 2006b), exposure to a negative stimulus may activate the aversive system, while the degree of activation is determined by the level of arousing content contained in the stimulus with more arousing content generating greater activation. The "calm negative messages" (Lang, Park, Sanders-Jackson, Wilson, & Wang, 2007, p. 331)—negative but not arousing messages—receive fewer resources than arousing messages during mediated message processing (Lang et al., 2007; Lang & Yegiyan, 2008). Another possible explanation is that for some participants, the negative stimuli were positive messages and for some they were negative messages. As Lang (2006b) noted, "what is positive and what is negative will have both cultural and individual variation" (p. S71). Clearly, this individual difference—which is consistent with earlier-mentioned findings regarding audience segment—will have an effect on motivational activation, and will then affect message processing. Finally, differences in demographics are a potential factor determining persuasive effects of stigma-related messages as well. Since "negative messages may evoke

greater aversive activation among older adults, especially women" (Lang, 2006b, p. S73), and this study used a really diverse sample of U.S. adults (compared to previous studies using college student samples), it is possible that individual characteristics are a major predictor in social-mediated message processing, especially when processing those hard-sell educational messages.

With regard to the effect of virality, a significant effect (p = .034) was found for virality on attitudes toward the message (H4a), but when put into ANOVA, this main effect disappeared. And no interaction effect was found between message valence and virality. This finding is completely different from previous studies that found significant interaction between emotional valence and virality on people's attitudes (e.g., Alhabash et al., 2013). Moreover, based on Sundar's (2008) MAIN model, it was hypothesized that machine heuristics such as the number of Likes/Shares may affect people's judgments of credibility, but the manipulation of virality was not found to affect perception of source credibility/message credibility in this study. A plausible reason for this result is that in a sample from a big population, using 1,000 Likes and Shares as the manipulation of "high virality" may not be enough, although the manipulation check of virality has been used in other studies (Alhabash et al., 2013) and was successful in the current study. In reality, it is very difficult for a health educational message to receive more than 1,000 Likes/Shares, let alone ten thousands of Likes/Shares, unless the message is from a celebrity or has other special elements to make it go viral. Therefore, the manipulation of virality definitely needs further research, perhaps incorporating multiple virality levels at one time (e.g., one low virality group with five Likes/Shares, one high virality group with 1,000 Likes/Shares, and one super high virality group with 100,000 Likes/Shares) to analyze how users interpret different levels of viral reach.

Relationships among the dependent variables were analyzed (H6a–H6c). In general, a correlation coefficient *r* between 0.4 and 0.6 is interpreted as moderate, and an *r* between 0.1 and 0.3 is considered a weak correlation (Dancey & Reidy, 2004). Quite a few moderate positive correlations (r > .30) were found between message evaluation variables (attitudes toward the message and perception of message credibility) and viral behavioral intentions (VBI), indicating that the more positive attitudes people have toward the message, or the higher the perception of credibility, the more likely they are to show "small acts of engagement" (Abroms & Craig Lefebvre, 2009, p. 420). It was also found that the correlations between message evaluation variables and viral behavioral intentions (VBI) were always stronger for the stimulus about depression than for the stimulus about schizophrenia, indicating that it is more difficult to translate affective responses into real-world outcomes for messages about more heavily stigmatized issues.

Last but not least, it is worth noting that participants for the study were recruited from a very diverse background. Unlike previous studies that mainly used student samples of 18- to 22-year-olds, the ages of the participants in this study ranged from 20 to 75 years, with a mean of 33.68 years. Only 5.7% (n = 15) of participants in this study were between 20 and 22 years old. Around 55% of participants reported being male. Around 77% of participants self-identified as White/Caucasian, with diverse ethnicities in the rest of the make-up.

Theoretical Implications

Implications for Persuasion Theories

This study opens some questions for future persuasion research. In Chapter 2, three persuasion theories/models (the elaboration likelihood model, the heuristic–systematic model, and the MAIN model) were reviewed to propose hypotheses and research questions related to

message valence and message virality. Whilst the result did not confirm hypotheses derived from these theories, it did provide some evidence of the impact of stigma types on the persuasion process. The different outcomes emerged from depression/schizophrenia conditions may be in line with social judgment theory (SJT; C. Sherif, Sherif, & Nebergall, 1965) which explains the biasing role of prior-held beliefs and which may be a better theoretical persepective to use in the future. According to SJT, people's prior attitudes toward a specific topic distort their perceptions of persuasive messages on that topic and have a main effect on attitude change. Individuals differ in the widths of their latitudes of acceptance, rejection, and noncommitment, and these three latitudes consititute an attitudinal continuum. As such, given the fact that people hold very different preexisting attitude toward depression and schizophrenia, it is possible that the prior-held beliefs and tendency to agree/discgree with the message guided people's perception and interpretation of new information about depression/schizphrenia, which is consistent with findings of RQ2a-RQ2f and RQ3a-RQ3b in this study.

SJT also posited that some individual characteristics —such as ego-involvement — make people more resistant to persuasion. Although dual-process models suggested that people with high levels of issue involvement are more susceptible to persuasion attempts (Petty et al., 1981; Petty and Cacioppo, 1984), SJT indicated that the key lies in (1) the extent to which a message matches with one's current attitude and (2) the various widths of latitudes of acceptance, noncommitment and rejection for different topics. Thus, merely discuss issue involvement is not enough. In the context of anti-mental illness stigma, the biggest challenges are the distance between one's attitude and the message and one's resistance to change. For example, for a passive supporter with neutral attitude, a narrow latitude of acceptance and a wide latitude of rejection, persuasion is not easy to achieve; but for a *stigmatizer* who has negative attitude, a

wide latitude of acceptance and a narrow latitude of rejection, persuasion is still very likely to occur.

Implications for Stigma Research

This study makes several contributions to the stigma research literature. First, the finding of the significant role of audience segments adds to our understanding of stigma-related categories. The effect of audience segments may explain why some of the past anti-stigma campaigns were ineffective or even backfired: Any attempts to target a highly diverse national audience at one time are not encouraged (Warner, 2008). The significant difference between *active supporters* and *passive supporters* provides additional evidence to this point, suggesting that more nuanced understanding of different target audiences is crucial for designing effective anti-stigma messages. Interestingly, the stigmatizing attitude scores among those who felt *stigmatized* slightly increased after exposure to messages about depression. One possible explanation is that the anti-stigma message triggered their self-consciousness about being in a disadvantaged group (Pinel, 1999). A social psychology construct, stigma-consciousness (SC), was coined by Pinel (1999) to describe individual differences in the extent to which targets expect to be stereotyped and in the belief that their stereotyped status pervades their life experiences. SC can be either dispositional or contextually induced. It does not refer to an individual's awareness of the existence of stereotypes; instead, it refers to the level of one's focus or mindfulness on one's stereotyped status (Pinel, 1999). At the behavioral level, people high in SC interpret messages from outgroup members more critically, exhibit unfavorable responses in intergroup interactions, are more willing to avoid stereotype-relevant situations (Pinel, 1999; 2004; Pinel & Paulin, 2004; Pinel, Warner, & Chua, 2005), and "forwent the opportunity to prove the stereotype wrong" (Pinel, 1999, p. 126). Increasing people's SC levels

might lead to lower self-esteem and make them more likely to confirm their stereotyped status. As such, it is possible that some of the anti-stigma messages may actually contribute to lower self-efficacy for positive behaviors among the *stigmatized*. More attention should be given to the potential unintentional effects of anti-stigma campaigns.

Second, the finding that no significant difference was observed between attitudes toward schizophrenia and depression in terms of personal responsibility is somewhat remarkable. A large quantity of research has been done on the link between stigmatizing attitudes toward mental illness and attributions of responsibility (Corrigan et al., 2005; Link, Yang, Phelan, & Collins, 2004). Results from the current study, however, showed that schizophrenia and depression were perceived as equally uncontrollable by oneself, while the overall score of stigmatizing attitude toward schizophrenia was significantly higher than the score of stigmatizing attitude toward depression. This represents a profound gap between stigma reduction and improvements in knowledge or health literacy (United States Department of Health and Human Services, 1999; Livingston et al., 2013) and further investigation into the dimension of personal responsibility is strongly recommended.

Although the experiment failed to find any significant effects of exposure to positive/negative messages or low-/high-virality messages, it added to a growing body of literature on anti-stigma campaigns. For instance, the finding that anti-stigma messages about schizophrenia was especially effective for *stigmatizers* is very inspiring. In the past several years, several scholars have cast doubt on the effectiveness of anti-stigma media campaigns (Corrigan, 2012; Sartorius, 2010). For example, Corrigan (2012) was critical in stating that past research on PSAs is “mostly lacking, provides moderate support for penetration at best, and fails to show meaningful impact” (p. 81). This study, in line with other recent studies (e.g., Livingston et al.,

2014), demonstrated both the effectiveness and challenges of social media-based anti-stigma interventions. Social media campaigns may be most likely to achieve the desired outcomes when appropriate strategies are chosen for different type of disorders and when tailored messages are provided for specific target audiences.

This study also added to the body of anti-stigma research by introducing a social media-based behavioral variable: viral behavioral intentions (VBI; Alhabash et al., 2013; Alhabash & McAlister, 2014). Previous research failed to find linear relationships between attitude change and behavior change in anti-stigma campaigns, but this study constantly found weak to moderate positive correlations between message evaluation variables (especially "attitudes toward the message" and "perception of message credibility") and VBIs. Although VBIs are not perfect measurements of actual behaviors, this study is among the first to show that favorable attitudes and higher perception of message credibility are correlated to stronger intentions to participate in viral activities on health-related issues.

Implications for Practitioners

Although the study is limited to text-only educational messages, the findings hold important implications for professionals. First, more efforts need to be put in place to educate the public on health conditions that have been more heavily stigmatized than others, including schizophrenia. At the same time, as the public is getting more familiar with the concept of "depression" from the media, celebrities, or personal contacts, it may be important for health agencies to reconsider current message strategies about depression and other more well-known diseases. Messages designed for "well-known" and "unknown" illnesses should be very different. Educational messages can be effective for those "unknown" diseases, but they have limitations as well. As pointed out by Lienemann, Siegel, and Crano (2013), certain elements of

hard-sell educational messages may serve to reinforce stigma and self-stigma, even though understanding may improve.

Another important practical implication is that both target audience segment and type of stigma should be taken into account when designing or evaluating messages. For example, when trying to reach the *passive supporters* for highly stigmatized issues, health organizations can explore useful strategies to encourage their followers (who are most likely to be either *stigmatized* or *supporters*) to "Share" the message with others in their social networks, so as to expand the influence of the original message to a second level.

Limitations and Future Research

Several limitations of the study must be acknowledged. First, given that the nature of the study design was a non-laboratory-based online experiment, most measurements used in the experiment were intentionally brief to prevent participants from losing patience and concentration. This may be a reason why no effect was found for involvement and social norm (perceived public stigma), as many previous studies have reported. More detailed and sensitive measurements should be used in the future.

Second, as mentioned earlier in this chapter, it may be the case that the manipulation of virality was not strong enough. Future studies should attempt to explore more reliable ways to manipulate viral reach and perceived societal influence of a social media message, and current theory on the influence of viral reach and perceived societal influence of social media messages also needs further development. In addition, future research must identify more reliable manipulation check questions. Instead of asking questions like "How many Likes did the Facebook status update receive," future studies can also ask perception-based questions such as

“Is this message going to be viral?” Asking perception-based questions could be a more solid way to test participants' true feelings about message virality.

Further, when manipulating the valence, the study did not consider the strength of claim. Simply based on the findings of this study, one cannot draw the conclusion that message valence has no impact on the effectiveness of anti-stigma messages. Further experimental investigations are needed to compare the effects of calm positive messages, calm negative messages, emotionally arousing positive messages, and emotionally arousing negative messages (Lang et al., 2007; Lang & Yegiyan, 2008).

Last but not least, a question that naturally arises is whether there are other factors besides audience segment, valence, and virality. More moderating factors need to be identified. For example, in a social media context, it would be interesting to assess the effects of personal connection. It is possible that for messages endorsed by one’s strong interpersonal ties (rather than one's weak ties), attention levels will be higher and successful persuasion is more likely to occur. Future research exploring other moderating factors should bear several points in mind: Disorder type is essential, audience segments are crucial, replications are needed, and the sample (e.g., students vs. general population) matters.

Conclusion

Taken together, these findings add to the growing body of media and communication research about mental illness stigma. The results of this exploratory study have revealed several compelling considerations for practitioners and scholars.

The findings are vital because even though the media today have helped to broaden the awareness of mental illnesses, it will still be a long time before the stigma is eliminated. Social media, as primarily an entertainment channel, can be an excellent tool to reach many people, but

the effects of messages delivered by social media to different audiences should be tested in more contexts. In closing, the researcher would like to reiterate the need for expanded and nuanced examination of the complexity of audience characteristics of stigma and the impact of anti-stigma messages packaged in different ways, as well as the relationship between social media campaigns, knowledge gain, attitude change, and intentions to help persons with stigmatized conditions. More research-based evidence will be helpful to develop best practices for this emerging tool.

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Appendix A

Informed Consent

AAHRPP Document # 119

THE UNIVERSITY OF ALABAMA

HUMAN RESEARCH PROTECTIONS PROGRAM

Individual's Consent to be in a Research Study

Dear Participant:

Bijie Bie, a PhD student in the College of Communication and Information Sciences at the University of Alabama, is conducting a study called 'Effects of mental health educational messages on social media' under the supervision of Dr. Shuhua Zhou, Professor & Associate Dean for Graduate Studies in the College of Communication and Information Sciences at the University of Alabama and Dr. Elliot Panek, assistant professor at the Department of Telecommunication and Film at the University of Alabama. She wishes to find out your thoughts and feelings about health messages on Facebook.

Taking part in this study involves completing a web survey that will take about 15–25 minutes. This survey contains questions about your basic social media usage and your perception about people with mental illness, as well as how you feel about mental health-related Facebook posts.

We will protect your confidentiality by keeping all your responses anonymous. Only the investigator will have access to the data. The data are password protected and your name and IP address will not be collected during/after the survey. Only summarized data will be presented at meetings or in publications.

In appreciation of your time, you will be given 0.8 US Dollars after completing this study. The findings may be useful to help researchers and practitioners better understand users' perception about health information on social media.

The chief risk is that some of the questions may make you uncomfortable. A few questions will ask your personal relevance with mental illness issues. You may skip any questions you do not want to answer.

If you have questions about this study, please contact Bijie Bie at (352) 222-8879 or by email at bbie@crimson.ua.edu. If you have questions about your rights as a research participant, contact Ms. Tanta Myles (the University Compliance Officer) at (205) 348-8461 or toll-free at 1-877-820-3066. If you have complaints or concerns about this study, file them through the UA IRB outreach website at http://osp.ua.edu/site/PRCO_Welcome.html. Also, if you participate, you are encouraged to complete the short Survey for Research Participants online at this website. This helps UA improve its protection of human research participants.

YOUR PARTICIPATION IS COMPLETELY VOLUNTARY. You are free to not participate or stop participating any time before you submit your answers.

If you understand the statements above, are at least 19 years old, and freely consent to be in this study, click on the CONTINUE button to begin.

Appendix B

Social Media Use Scale

1. How often do you use other online social networking sites like Twitter, LinkedIn, YouTube, Instagram, and Pinterest?

- never
- not at all frequently, maybe once a day or rarely
- not very frequently, two to four times a day
- somewhat frequently, five to 10 times a day
- frequently, almost every hour
- very frequently, one or more times every hour

2. How often do you use Facebook?

- never
- not at all frequently, maybe once a day or rarely
- not very frequently, two to four times a day
- somewhat frequently, five to 10 times a day
- frequently, almost every hour
- very frequently, one or more times every hour

Appendix C

Preexisting Attitudes toward the Mentally Ill

Conditions 1-4

According to the World Health Organization, mental disorders such as depression are affecting millions of people wordwide.

Depression is characterized by sadness, loss of interest or pleasure, feelings of guilt or low self-worth, disturbed sleep or appetite, feelings of tiredness, and poor concentration.

Please select your answer to each of the following statements:

1. I would feel unsafe around persons with **depression**.

1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
not at all								very much

2. Persons with **depression** terrify me.

1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
not at all								very much

3. I would try to avoid a person with **depression**.

1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
not at all								very much

4. How angry do persons with **depression** make you feel?

1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
not at all								very much

5. How controllable do you think **depression** is?

1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
not at all under personal control								completely under personal control

6. How likely is it that you would help a person with **depression**?

1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
definitely would not								definitely would

7. How certain do you feel that you would help a person with **depression**?

1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
not at all certain								absolutely certain

Conditions 5-8

According to the World Health Organization, mental disorders such as schizophrenia are affecting millions of people wordwide.

Schizophrenia is a severe mental disorder, characterized by profound disruptions in thinking, affecting language, perception, and the sense of self. It often includes psychotic experiences, such as hearing voices or delusions.

Please select your answer to each of the following statements:

1. I would feel unsafe around persons with **schizophrenia**.

1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
not at all								very much

2. Persons with **schizophrenia** terrify me.

1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
not at all								very much

3. I would try to avoid a person with **schizophrenia**.

1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
not at all								very much

4. How angry do persons with **schizophrenia** make you feel?

1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
not at all								very much

5. How controllable do you think **schizophrenia** is?

1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
not at all under personal control								completely under personal control

6. How likely is it that you would help a person with **schizophrenia**?

1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
definitely would not								definitely would

7. How certain do you feel that you would help a person with **schizophrenia**?

1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
not at all certain								absolutely certain

Appendix D

Mental illness-Involvement Measure

Personal relevance (adapted from Flora & Maibach, 1990)

Please select your answer to each of the following statements:

1. I think about Mental Illness a great deal.

1	**2**	**3**	**4**	**5**	**6**	**7**
strongly disagree						strongly agree

2. I consider myself at risk of developing a mental illness

1	**2**	**3**	**4**	**5**	**6**	**7**
strongly disagree						strongly agree

3. Mental illness is a personally relevant topic for me

1	**2**	**3**	**4**	**5**	**6**	**7**
strongly disagree						strongly agree

4. I actively seek the most recent information about mental illness

1	**2**	**3**	**4**	**5**	**6**	**7**
strongly disagree						strongly agree

Perceived Stigmatization (adapted from Pinel, 1999)

1. Stereotypes about the mentally ill have not affected me personally

1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
strongly disagree								strongly agree

2. I never worry that my behaviors will be viewed as stereotypically mentally ill

1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
strongly disagree								strongly agree

Appendix E

Perceived Public Stigma of Mental Illness

(adapted from Link, Cullen, Struening, Shrout, & Dohrenwend, 1989)

Please select your answer to each of the following statements:

1. Most people would willingly accept a former mental patient as a close friend.

1	**2**	**3**	**4**	**5**	**6**	**7**
strongly agree						strongly disagree

2. Most people believe that a former mental patient is just as trustworthy as the average citizen.

1	**2**	**3**	**4**	**5**	**6**	**7**
strongly agree						strongly disagree

3. Most people would accept a fully recovered former mental patient as a teacher of young children in a public school.

1	**2**	**3**	**4**	**5**	**6**	**7**
strongly agree						strongly disagree

4. Most people feel that entering a mental hospital is a sign of personal failure.

1	**2**	**3**	**4**	**5**	**6**	**7**
strongly agree						strongly disagree

5. Most young women would be reluctant to date a man who has been hospitalized for a serious mental disorder.

1	**2**	**3**	**4**	**5**	**6**	**7**
strongly agree						strongly disagree

Appendix F

Manipulation Check Questions

1. The Facebook status update you just read was about stigma of
    A. depression
    B. schizophrenia
    C. bipolar disorder
    D. anxiety

2. Which of the two phrases appeared in the Facebook status update you just read?
    A. respectable, reliable and capable
    B. violent, unpredictable, and dangerous

3. How many Likes did the Facebook status update receive?
    A. 1-10
    B. 11-50
    C. more than 51

Appendix G

Dependent Measures of Attitude toward Message

Please rate the Facebook status update you just read:

1. It is helpful.

1	**2**	**3**	**4**	**5**	**6**	**7**
strongly agree						strongly disagree

2. It is a valuable resource.

1	**2**	**3**	**4**	**5**	**6**	**7**
strongly agree						strongly disagree

3. It is important for health.

1	**2**	**3**	**4**	**5**	**6**	**7**
strongly agree						strongly disagree

4. It offers something useful to individuals.

1	**2**	**3**	**4**	**5**	**6**	**7**
strongly agree						strongly disagree

5. It offers something positive to individuals.

1	**2**	**3**	**4**	**5**	**6**	**7**
strongly agree						strongly disagree

6. It is a waste of time.

1	**2**	**3**	**4**	**5**	**6**	**7**
strongly agree						strongly disagree

Appendix H

Post-exposure Attitudes toward Depression/Schizophrenia

(adapted from Corrigan et al., 2003)

Conditions 1–4

Logan is a 30 year-old with depression. Logan lives alone in an apartment and works as a clerk at a large law firm. Logan has been hospitalized six times because of his depression. CIRCLE THE NUMBER OF YOUR ANSWER TO EACH QUESTION.

1. How dangerous would you feel Logan is?

1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
not at all								very much

2. How scared of Logan would you feel?

1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
not at all								very much

3. I would think that it was Logan's own fault that Logan is in the present condition.

1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
not at all								very much

4. How angry would you feel at Logan?

1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
not at all								very much

5. How likely is it that you would help Logan?

1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
definitely would not								definitely would

6. I would try to stay away from Logan.

1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
definitely would not								definitely would

Conditions 5-8

Logan is a 30 year-old with schizophrenia. Logan lives alone in an apartment and works as a clerk at a large law firm. Logan has been hospitalized six times because of his schizophrenia.

CIRCLE THE NUMBER OF YOUR ANSWER TO EACH QUESTION.

1. How dangerous would you feel Logan is?

1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
not at all								very much

2. How scared of Logan would you feel?

1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
not at all								very much

3. I would think that it was Logan's own fault that Logan is in the present condition.

1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
not at all								very much

4. How angry would you feel at Logan?

1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
not at all								very much

5. How likely is it that you would help Logan?

1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
definitely would not								definitely would

6. I would try to stay away from Logan.

1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
definitely would not								definitely would

Appendix I

Dependent Measures of Source Credibility

(adapted from Lee & Sundar, 2013)

How would you rate the organization which posted the Facebook status update?

1	**2**	**3**	**4**	**5**	**6**	**7**
undependable						dependable
1	**2**	**3**	**4**	**5**	**6**	**7**
dishonest						honest
1	**2**	**3**	**4**	**5**	**6**	**7**
unreliable						reliable
1	**2**	**3**	**4**	**5**	**6**	**7**
insincere						sincere
1	**2**	**3**	**4**	**5**	**6**	**7**
untrustworthy						trustworthy

Appendix J

Dependent Measures of Message Credibility

(adapted from Lee & Sundar, 2013)

How would you rate the credibility of the Facebook status update?

1	**2**	**3**	**4**	**5**	**6**	**7**
inaccurate						accurate
1	**2**	**3**	**4**	**5**	**6**	**7**
not believable						believable
1	**2**	**3**	**4**	**5**	**6**	**7**
not fair						fair
1	**2**	**3**	**4**	**5**	**6**	**7**
insincere						sincere
1	**2**	**3**	**4**	**5**	**6**	**7**
untrustworthy						trustworthy

Appendix K

Dependent Measures of Viral Behavioral Intentions

1. I would "Like" this post on Facebook.

1	**2**	**3**	**4**	**5**	**6**	**7**
strongly agree						strongly disagree

2. I would "Share" this post with my FB friends.

1	**2**	**3**	**4**	**5**	**6**	**7**
strongly agree						strongly disagree

3. I would comment on this post on Facebook.

1	**2**	**3**	**4**	**5**	**6**	**7**
strongly agree						strongly disagree

4. I would share what I have learned in this FB post with others through off-line interactions.

1	**2**	**3**	**4**	**5**	**6**	**7**
strongly agree						strongly disagree

Appendix L

Demographic Information

Please select your gender

- Male
- Female

Please tell us your age: _____

Please select the race or ethnicity you identify with (mark all that apply)

- White/Caucasian
- African American
- American Indian or Alaska Native
- Asian or Pacific Islander
- Hispanic or Latino
- Other (Specify) _____

Appendix M

IRB Approval

February 3, 2015

Office for Research

Institutional Review Board for the
Protection of Human Subjects

THE UNIVERSITY OF
ALABAMA
RESEARCH

Bijie Bie
College of Communication and Information Sciences
The University of Alabama
Box 870152

Re: IRB # 15-OR-027, "Effects of mental health educational messages on social media"

Dear Mr. Bie:

The University of Alabama Institutional Review Board has granted approval for your proposed research.

Your application has been given expedited approval according to 45 CFR part 46. You have also been granted the requested waiver of informed consent. Approval has been given under expedited review category 7 as outlined below:

(7) Research on individual or group characteristics or behavior (including, but not limited to, research on perception, cognition, motivation, identity, language, communication, cultural beliefs or practices, and social behavior) or research employing survey, interview, oral history, focus group, program evaluation, human factors evaluation, or quality assurance methodologies.

Your application will expire on February 1, 2016. If your research will continue beyond this date, please complete the relevant portions of the IRB Renewal Application. If you wish to modify the application, please complete the Modification of an Approved Protocol form. Changes in this study cannot be initiated without IRB approval, except when necessary to eliminate apparent immediate hazards to participants. When the study closes, please complete the Request for Study Closure form.

Should you need to submit any further correspondence regarding this proposal, please include the above application number.

Good luck with your research.

Sincerely,

Stuart Usdan, Ph.D.
Chair, Non-Medical IRB
The University of Alabama

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