

Information seeking versus avoiding:

How do college students respond to stress-related information?

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Abstract

Focusing on the population of college students in the health context of stress and stress management, this study used an experimental design to test whether the variables of risk perception, response efficacy, self-efficacy, and source credibility can influence health information engagement. Results showed that both risk perception and response efficacy were positively associated with information seeking and negatively associated with information avoiding, but only risk perception had a strong and statistically significant influence on information engagement. No interaction or moderating effects were found. The implications of these findings for information engagement research and strategic health communication are discussed.

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Introduction

It is assumed that people always want to know; curiosity is part of human nature. We look for information when we are trying to have a better understanding of ourselves, of the world we are living in, and of the situations we are experiencing. But is the above assumption always true? We also have observed that people may avoid information if the information is not relevant to them, if paying attention would cause mental discomfort, if being ignorant could help them to remain hopeful, and so forth. Specifically, information avoidance often occurs when it comes to health decisions. For example, Angelina Jolie had genetic testing because of her breast cancer family history, but not every woman would consider such testing or would receive the testing results for fear of dealing with psychological stress. In a study of genetic testing for hereditary colon cancer, more than half of the 208 family members (57%) refused to receive their genetic test results (Lerman et al., 1999). Likewise, in another study of HIV posttest counseling among an STD clinic population, 55% of 411 HIV-uninfected subjects failed to return for their test results (Hightow et al., 2003). These examples pose the question: why do people sometimes prefer being ignorant about their health? To be specific, what factors influence whether a person seeks or avoids health information?

Based on the definition provided by Brashers and colleagues (2002), “information can be defined as stimuli from a person’s environment that contribute to his or her knowledge or beliefs” (p. 259). Health information, thus, can be defined as stimuli from a health context that contribute to one’s knowledge or beliefs. Health information can be acquired by communicating with health professionals, friends, and family members, as well as by scanning from mass media (Barbour, Rintamaki,

Ramsey, & Brashers, 2012; Brashers, Goldsmith, & Hsieh, 2002). Adopting Niederdeppe et al.'s (2007) definition of information seeking, the current study views information seeking as "active efforts to obtain specific information in response to a relevant event" (p. 154). Health information seeking can occur when one has recently been diagnosed with a certain disease (Longo, 2005); when one is concerned he or she is at risk for a disease (Chae, 2015); or when one reads a news article reporting a celebrity's cancer (or other disease) disclosure (Noar, Willoughby, Myrick, & Brown, 2014). While people seek out information actively, they also sometimes purposely avoid health information: when they feel the new information is dissonant with their current beliefs (Case, Andrews, Johnson, & Allard, 2005); when they want to maintain uncertainty or hope about a health condition (Barbour, Rintamaki, Ramsey, & Brashers, 2012; Savolainen, 2013); when they have no ability to change the situation (Melnyk & Shepperd, 2012; Miles, Voorwinden, Chapman, & Wardle, 2008); or when they have no capability to process the messages (McCloud, Jung, Gray, & Viswanath, 2013). Throughout all of these examples, people choose to block themselves from receiving more information. In contrast to information seeking, information avoidance is defined as "any behavior designed to prevent or delay the acquisition of available but potentially unwanted information" (Sweeny, Melnyk, Miller, & Shepperd, 2010, p. 341).

Underlying all these examples is the idea that people want to learn more under some circumstances, but do not want to learn more under others. The question is what are these circumstances. To be specific, are there some differences between the circumstances of information seeking and information avoiding and if so, what are these differences? This thesis therefore aims to shed some light on the

overarching question: what factors may influence subsequent health information seeking or avoiding?

To address this question, I conducted an experiment, which tests whether exposure to messages with different levels of threat, response efficacy, and source credibility has an impact on intentions to seek or avoid information. In order to provide more practical implications, this study focuses on the population of college students in the health context of stress and stress management. I chose this population because college students are experiencing life transitions (i.e., new environment, higher academic pressure) and developing health behaviors during this period. Stress, due to its high prevalence among young adults and its impact on overall health, is worthy of study. This thesis will provide empirical evidence for the link between the variables of risk perception, response efficacy, self-efficacy, source credibility, and information seeking/avoiding and, by using an experimental design, strengthen causal claims for any relationships observed. In addition, this study will help us to understand how to frame stress and stress management to communicate with college students more effectively. In the following section, I will discuss the existing frameworks of studying health information engagement, key determinants leading to information seeking or avoiding, and stress as a public health issue. The methods section explicates the stimuli messages, participant recruitment, the experimental procedure, and specific measurement of the variables of interest. Finally, I offer the results of the study and a discussion of the implications.

Literature Review

The following literature review provides a framework to guide the current study by discussing: 1) information seeking and avoiding in the public health context; 2) existing theories or models for approaching health information seeking and avoiding; 3) key concepts (i.e., risk perception, response efficacy, self-efficacy, and source credibility) related to health information seeking and avoiding; and 4) a rationale for studying these concepts in the stress and stress management context.

Information seeking and avoiding in the health context

Information, as explained above, is stimuli from the environment that contributes to our knowledge. When we are exposed to these stimuli, we might respond to them by interpreting, evaluating, seeking, avoiding, and so forth. These cognitive and communicative activities combined are referred to as information management (Brashers, Goldsmith, & Hsieh, 2002). Health information management, as a subfield of information management, has received substantial research attention (Afifi & Weiner, 2004; Niederdeppe et al., 2007). Within this prominent line of research, health information seeking has likely generated the most studies.

Information can facilitate coping with anxiety caused by uncertainty, and gathering more information from physicians, friends, and family members may be the first thing people try to do after diagnosis. According to a survey conducted by Pew Research Center (2012), 70% of respondents said they turned to a doctor or other health care professionals to get information the last time they had a health issue; 60% went to friends and family for help; and 24% reported they consulted others who have the same health condition. There is also evidence suggesting health information seeking can moderate the relationship between media exposure and health behavior decisions (Griffin, Dunwoody, & Neuwirth, 1999; Niederdeppe, Frosch, & Hornik,

2008). Understanding health information seeking behavior, therefore, may help patients to cope with illnesses and encourage behavior change among the general public.

Unlike health information seeking, which has generated a large body of research, health information avoidance is relatively under-studied and often limited to situations where cognitive dissonance occurs (Barbour, Rintamaki, Ramsey, & Brashers, 2012). However, it is important to understand both behaviors because both can affect health communication outcomes such as public health campaign effects and interpersonal communication between patients and physicians (Brashers et al., 2002; Howell & Shepperd, 2013). If an individual keeps avoiding information from physicians or campaign messages, he or she may end up with negative health outcomes (e.g., stress leading to depression) or no behavior change. Therefore, there is a need to explore what determinants may lead to health information avoidance. It is also worth noting that avoidance is not limited to oneself; it can also involve others (Sweeny, Melnyk, Miller, & Shepperd, 2010). People may choose to not be informed of test results of their spouse or partner. There is also temporary avoidance and permanent avoidance (Sweeny, Melnyk, Miller, & Shepperd, 2010). It does not necessarily mean that someone would avoid information forever if he or she does not want to know test results now. In fact, an information avoider may later become an information seeker.

Existing frameworks for approaching information seeking and avoiding

Attempts to understand information seeking and avoiding are varied. Though this research agenda has received attention from communication as well as psychology and medical disciplines, the lines of research within each field are somewhat disconnected. The current study does not aim to provide a systematic

review of information management studies. Instead, the focus is explaining how the existing frameworks inform the current study by introducing some that are widely employed. Based on the underlying explanations of information engagement decisions, I categorize the existing theories and models that approach people's information engagement into three groups: 1) personal characteristics, 2) cognitive evaluation, and 3) social determinants.

Some psychologists regard the coping behaviors of seeking and avoiding as personality traits. Coping styles for dealing with threats are characterized into monitoring (attending to) and blunting (avoiding) (Miller, 1995). Individuals who are monitors are more concerned about their risk and require information more actively, while individuals who are blunters tend to avoid threat information and distract themselves from it. Also, there is evidence that patients have better psychological and physiological outcomes when they are offered information about their illness that is congruent with their coping style. Monitors tend to fare better with more information, whereas blunters tend to do better with less information (Miller, 1995).

Besides characterizing personal coping styles, psychologists also have been trying to explain why people intentionally select some stimuli over others, which is called "selective exposure." Humans have the tendency to seek information that is consistent with their prior beliefs, opinions, and knowledge, and avoid information that causes conflict with them (Jonas, Schulz-Hardt, Frey, & Thelen, 2001; Sears & Freedman, 1967). Selective exposure is primarily explained by cognitive dissonance theory (Zillman & Bryant, 1985). To avoid cognitive dissonance, people would ignore information that challenges their existing beliefs. However, selective exposure only emphasizes the selection process. In other words, it stresses which information is selected, but not which is avoided. Along with the line of research within

psychology, some communication scholars have also studied information avoidance. For example, questioning the assumption that humans always want to know, uncertainty management theory asks whether uncertainty can cause anxiety and argues that sometimes people deliberately increase uncertainty (Brashers, 2001). To escape from distressing certainty (e.g., confirmation that one's symptoms are indicative of cancer), people might avoid information to maintain uncertainty or seek information that contradicts their current knowledge.

The third approach to studying people's information engagement focuses on social determinants, such as gender, income, education, class, race, and ethnicity. In particular, the 2003 Health Information National Trends Survey (HINTS) indicated that cancer information seekers were more likely to have at least college education, incomes greater than \$50,000, and a family history or prior diagnosis of cancer; and they were also less likely to be male, Hispanic, and 65 or older (Finney Rutten, Squiers, & Hesse, 2006). Likewise, Ramanadhan and Viswanath (2006) categorized HINTS respondents into four groups: nonseeker patients, the nonseeker public, seeker patients, and the seeker public, and found that the nonseeker patients group had the lowest income and education level compared to the other three. In another survey of 519 cancer survivors, researchers found that participants who were younger lower-income females, who had difficulty finding information were more likely to become information avoiders (McCloud, Jung, Gray, & Viswanath, 2013). These examples imply that social determinants may influence people's information engagement to some degree.

Some models that attempt to integrate and extend research on health information management have developed, such as the Theory of Motivated Information Management (TMIM) (Afifi & Weiner, 2004) and the Risk Information

Seeking and Processing (RISP) (Griffin, Dunwoody, & Neuwirth, 1999). The RISP model tries to understand how individuals respond to risk information and maps out antecedents of information seeking and processing. The key RISP model variables include perceived hazard characteristics, affective response, informational subjective norms, information sufficiency, perceived information gathering capacity, and so forth. The TMIM proposes that information management is an iterative process, which contains three hierarchical phases: interpretation, evaluation, and decision. Not only do the prior phases influence an individual's final decision about information engagement, but also the outcomes can impact future interpretation and evaluation. Though neither the TMIM nor RISP model posit information providers as a key variable, they do regard information source as an important factor that likely affects information engagement. Due to the complexity of these models, most studies guided by them have used survey methods and correlation analyses to illustrate how certain variables are associated with information seeking and avoiding (i.e., positively or negatively). Despite the fact that these models shed some light on the understanding of this complicated process, they fail to establish direct causal relationships between these factors and the dependent variables of concern.

Based on these frameworks, the current study focuses on four variables – risk perception, response efficacy, self-efficacy, and source credibility, that may influence information coping style, and attempts to establish causal relationship between these by using an experimental design.

Risk perception and information seeking/avoiding

Risk perception, as one of the core concepts in health communication research, has been conceptualized in several ways. This study focuses specifically on the definition of risk perception as people's cognitive evaluation of a potential risk.

Although some information seeking and processing models argue there are other dimensions of risk perception (Griffin, Dunwoody, & Neuwirth, 1999; Lipkus, 2007; Neuwirth, Dunwoody, & Griffin, 2000; Trumbo, 1999), this study takes the view of the Health Belief Model, which mainly centers on two dimensions: perceived susceptibility (i.e., beliefs about the likelihood of getting a disease) and perceived severity (i.e., beliefs about the seriousness of getting a disease) (Nancy, Janz, & Becker, 1984). There is some evidence suggesting that risk perception levels can influence subsequent information seeking and avoiding (Griffin, Dunwoody, & Neuwirth, 1999; Lu, 2015; Yang & Kahlor, 2012). For example, as a component in the RISP model, risk perception could activate one's sense of knowledge insufficiency about the risk and indirectly influence one's decision to seek information (Griffin, Dunwoody, & Neuwirth, 1999; Griffin, Neuwirth, Dunwoody, & Giese, 2004; Neuwirth, Dunwoody, & Griffin, 2000; Trumbo, 1999; Yang, Aloe, & Feeley, 2014).

When individuals regard themselves as susceptible to a threat, they may also have some negative emotions that are associated with risk perception, such as worry, anxiety, and even fear (Griffin, Dunwoody, & Neuwirth, 1999; Van der Linden, 2014; Yang & Kahlor, 2014). These kinds of emotional and mood reactions to threatening information are defined as affective responses. Besides negative affect, some studies point out that positive affect such as optimism may also emerge when individuals face a threat (Aspinwall & Brunhart, 1996). While moderate negative affect induced by risk perception can generate information seeking to reduce uncertainty, extreme negative affect can lead to further information avoidance (Chae, 2015; Miles, Voorwinden, Chapman, & Wardle, 2008). For instance, Chae (2015) conducted a survey using both a student and a nationally representative sample and

found cancer worry was positively associated with information use and negatively associated with information avoidance; however, cancer fear was positively associated with both outcomes. Similarly, Miles and colleagues (2008) found that among older adults, a higher level of cancer fear and fatalism would lead to a higher level of cancer information avoidance. On the other hand, since positive affect may suggest the risk is not severe and individuals have the ability to solve the problem, they may lack motivation to spend more time searching for information (Lu, 2015; Yang & Kahlor, 2013). Consistent with this assumption, Yang and Kahlor (2013) found that positive affect was positively related to climate change information avoidance, but no statistically significant relationship was established between positive affect and information seeking intention.

Based on the above theoretical foundation and empirical findings, the following hypothesis is posed:

Hypothesis 1: Compared to a low risk perception, a high risk perception will prompt higher intentions to seek information (H1a) and lower intentions to avoid information (H1b).

Two types of efficacy and information seeking/avoiding

When an individual responds to threatening information, aside from the appraisal of susceptibility and severity of the risk, another appraisal system may also be activated: coping appraisal (Grothmann & Reuswig, 2006; Rippetoe & Rogers, 1987). If people perceive there are some methods or receive some recommended responses to reduce the risk and change the situation, they may actively react to this risk information (e.g., information seeking). In contrast, if people think there is not much that can be done to deal with the illness or condition, they may choose not to respond to the information (e.g., information avoidance). Response efficacy refers to

this perceived effectiveness of the recommended instructions. To be more specific, response efficacy is conceptually described as the belief that “the adaptive response will work, that taking the protective action will be effective in protecting the self or others” (Floyd, Prentice-Dunn, & Rogers, 2000, p.411). Some evidence suggests that response efficacy has a significant effect on individuals’ intentions to perform certain behaviors and is one of the best predictors of this intention (Lam, 2006; Stanley & Maddux, 1986). In a study conducted by Lewis and colleagues (2010) using an experimental design, response efficacy was found to be a mediator between different message appeals and message effectiveness in the context of anti-speeding. In addition, some health communication scholars have tested the relationship between response efficacy and information management engagement (Floyd, Prentice-Dunn, & Rogers, 2000; Rippetoe & Rogers, 1987). For instance, Rippetoe and Rogers (1987) conducted an experiment and found that high response efficacy led to positive adaptive coping and did not generate maladaptive coping (i.e., information avoidance). Nan and colleagues (2011) also found similar results by analyzing 2003 HINTS data. Specifically, perceived response efficacy had independent effects on cancer information seeking. Thus, response efficacy, as an important determinant of information management, message acceptance and behavior change, deserves to be examined. This study attempts to test if different levels of perceived response efficacy would lead to distinct coping outcomes.

Response efficacy can exist in a risk information message and further influence people’s perceived response efficacy (Witte, 1992). For example, if a message provides recommendations on how to cope with stress and how easy these are to undertake, recipients may feel empowered and be willing to seek out more

information regarding how to cope with stress and even follow the provided suggestions.

Always accompanied with but distinct from response efficacy, self-efficacy refers to the perceived subjective ability that one can successfully perform the recommended behavior. Originally proposed by Bandura (1977), self-efficacy has become a well-researched concept in the health communication field and is incorporated into several health behavior models such as the revised Health Belief Model (Rosenstock, Strecher, & Becker; 1988), Theory of Reasoned Action (Ajzen & Fishbein, 1980) and Social Cognitive Theory (Bandura, 1977). Self-efficacy is an important predictor of behavioral intention and has been extensively examined as a determinant not only associated with motivation but also with other concepts (Chen & Feeley, 2013; Cho, So, & Lee, 2009; Hertog, Finnegan, Rooney, Viswanath, & Potter, 2009; Maibach, Flora, & Nass, 2009; Willis, 2015). Generally speaking, individuals with higher self-efficacy would hold a stronger belief that they are capable of performing the behavior and are more likely to engage in the behavior. In addition, self-efficacy was found to be a predictor of health information seeking behavior (Floyd, Prentice-Dunn, & Rogers, 2000). For example, Rimal (2000) conducted a longitudinal study on cardiovascular disease (CVD) information use and found that the higher self-efficacy was, the stronger the motivation to think about CVD was and greater information seeking behavior occurred. Lo, Wei and Su (2012) provided some evidence supporting this relationship. In their survey analysis, a positive relationship was found between self-efficacy and swine flu news attention.

Translating the above into the specific context of communicating stress and stress management, if the students think the tips of coping with stress would work (i.e., high response efficacy), they are likely to search for more information to

prevent or reduce feelings of stress. In contrast, if students think the stress management tips would not be effective (i.e., low response efficacy), they are likely to avoid receiving more information relevant to stress. However, it is worth noting the role that self-efficacy plays in this process. If one believes he or she has no capability to follow the provided tips (i.e., low self-efficacy), it is likely he or she would opt to avoid instead of seek out information, even though there is a high response efficacy perception. This assumption informs the following hypotheses:

Hypothesis 2: Compared to a low response efficacy perception, a high response efficacy perception will prompt higher intentions to seek information (H2a) and lower intentions to avoid information (H2b).

Hypothesis 3: The relationship between response efficacy and information seeking/avoiding will be moderated by self-efficacy, so that the level of information seeking will be greatest for those who have a high level of response efficacy and a high level of self-efficacy (H3a). The level of information avoidance will be greatest for those who have a high level of response efficacy and a low level of self-efficacy (H3b).

Source credibility and information seeking/avoiding

Risk information studies are based on the assumption that information has effects on or does something to individuals (Griffin, Dunwoody, & Neuwirth, 1999). The content is an important component of information, but the source of the information (i.e., information providers) should also be taken into account when evaluating information effects. In fact, a lack of sufficient consideration of the information provider in the information exchange has been identified as one of the shortcomings of information management research (Afifi & Weiner, 2004). As an example of accounting for the information provider, the RISP model incorporates

relevant channel beliefs as one component influencing people's information seeking and processing engagement. In the RISP model, relevant channel beliefs include beliefs about a specific channel in terms of trustworthiness, usefulness, and accessibility (Griffin, Dunwoody, & Neuwirth, 1999; Yang & Kahlor, 2013). The current study's primary interest rests on the characteristic of perceived credibility. Source credibility refers to the believability of a source. Theoretically, source credibility has been divided into two sub-dimensions: expertise and trustworthiness (Lagoë, 2013; Poortinga & Pidgeon, 2003; Walther, Wang, & Loh, 2004; Wang, Walther, Pingree, & Hawkins, 2008). Expertise refers to information providers' qualification or knowledge about a topic, and trustworthiness refers to a judgment about whether information providers are motivated to tell the truth or are biased (i.e., serve their self-interest of a topic) (Walther, Wang, & Loh, 2004).

Health information can be disseminated by different sources via diverse channels. These sources can range from high credibility to low credibility. In the health context, high credibility sources may include physicians and government health organizations, and low credibility sources may include non-government health organizations, pharmaceutical companies and celebrities (Lagoë, 2013; Walther, Wang, & Loh, 2004), though these evaluations can vary among different people. In an analysis of the 2003 HINTS data by Hesse and colleagues (2005), physicians were rated as the most trustworthy information sources, followed by Internet, television, family or friends, magazines, newspapers, and radio.

Source credibility is considered to have an influence on persuasion effects, information processing strategies, and decision-making (Griffin, Dunwoody, & Neuwirth, 1999; McComas & Trumbo, 2001; Trumbo & McComas, 2003). For example, Trumbo and McComas (2003) conducted an experiment about the way

people process information when the information is from state health departments, citizen groups, and industries involved in the context of suspected cancer clusters. The results indicated that high credibility perception for industries and state health departments and low credibility perception for citizen groups could promote heuristic processing, whereas low credibility perception for industries and state health departments and high credibility perception for citizen groups could prompt systematic information processing. However, there is also evidence suggesting there is no significant difference in perceived credibility among different sources (Bates, Romina, Ahmed, & Hopson, 2006; Eastin, 2006). For instance, Eastin (2006) attempted to assess people's perception of general online health information credibility using a 2 (message type) x 3 (source type) factorial design and manipulated source credibility as high, medium, and low. The experimental results showed an overall tendency to rate all information sources as credible. This indicates that source credibility may not be an important factor when people evaluate used information. One explanation is that the evaluation is guided by message content rather than message source (Trumbo & McComas, 2003).

When considering source credibility in delivering health information, high credibility sources may encourage more consideration of the health condition and potential attitude change. Whether source credibility could have an influence on information seeking/avoiding behavior is less studied (Griffin et al., 2008). However, source, as an important component of information, is meaningful to examine. The result could shed light on how to deliver risk information about one's health more effectively via appropriate channels and encourage active information seeking instead of avoidance among information receivers. Griffin et al.'s (2008) study can be an example. They applied the RISP model to test the relationship between channel

beliefs and information seeking. Although the relationship was less consistent, the beliefs of media distortion of river flooding stories were negatively related to information seeking, but the relationship was weak with a coefficient of $-.06$. This finding suggests that lower trust in information source may lead to information avoiding instead of information seeking. Griffin et al. argued that channel beliefs might better predict information seeking when they interact with other variables: motivation and efficacy. The current study attempts to test the moderating effects of channel beliefs, and in this specific situation, source credibility. In addition, I argue when individuals encounter risk information from a credible source, they may have a stronger belief that they are susceptible to the risk. If response efficacy is high, which indicates there are some effective ways to reduce the risk, people are likely to seek out information and solve the problem, whereas if response efficacy is low, people may avoid receiving more information in order to ease negative emotions. However, due to the fact that there is not much direct evidence supporting this argument, two research questions instead of hypotheses are proposed:

Research Question 1: Will source credibility moderate the relationship between risk perception and information seeking/avoiding? (i.e., Will the level of information seeking be greatest for those who have a high level of risk perception and perceive a high level of source credibility? Will the level of information avoidance be greatest for those who have a high level of risk perception and perceive a low level of source credibility?)

Research Question 2: Will source credibility moderate the relationship between response efficacy and information seeking/avoiding? (i.e., Will the level of information seeking be greatest for those who have a high level of response efficacy and perceive a high level of source credibility? Will the

level of information avoidance be greatest for those who have a high level of response efficacy and perceive a low level of source credibility?)

Interaction between perceived risk and efficacy

Besides being interested in the impact of individual factors (i.e., risk perception, response efficacy) and potential moderators (i.e., self-efficacy, source credibility) on information seeking and avoiding, the current study also intends to explicate how these factors interact with each other to influence information engagement. There are some studies that have examined interaction effects between some of these variables on health behaviors and information engagement. For example, in a 2 x 2 experiment, intention of engaging in AIDS preventive behaviors was found to be highest among respondents who had a relatively high risk perception and high self-efficacy (Yzer, Fisher, Bakker, Siero, & Misovich, 1998). Similarly, Wong (2012) conducted a cross-sectional survey on cancer-related information seeking and scanning behaviors among the general population, and found that the group of individuals who perceived both high risk and self-efficacy reported highest information seeking and scanning behaviors compared to other risk/self-efficacy groups. Drawing on the Extended Parallel Process Model (EPPM), Miles et al. (2008) found that the relationship between cancer fatalism and cancer information avoidance was mediated by both perceived cancer risk and response efficacy in a community-based survey of older adults. Though as stated above, there are many studies that were interested in interaction between risk perception and self-efficacy, I chose to focus on the interaction between risk perception and response efficacy, and regarded self-efficacy as a potential moderator. Self-efficacy is a key determinant of intention of performing a certain behavior, normally preventive behavior in the health context. However, the current study does not attempt to examine the impacts

on people's behavioral intentions after they read stress management recommendations; instead, it tries to understand people's information engagement. I argue that in the information engagement process, response efficacy (i.e., if the recommendations are effective) may be more important than self-efficacy (i.e., if they believe they have the ability to follow the recommendations). Therefore, a last hypothesis is proposed:

Hypothesis 4: Risk perception and response efficacy will interact so that the level of information seeking will be greatest for those who have a high level of risk perception and a high level of perceived response efficacy (H4a), and the level of information avoidance will be greatest for those who have a high level of risk perception and a low level of perceived response efficacy (H4b).

When it comes to information seeking/avoiding, there are many determinants that may influence the choice between the two, such as personal characteristics, knowledge insufficiency, informational subjective norms, information gathering capacity, and so forth. And there are also different theories and frameworks that try to explain information seeking and avoiding phenomena in the context of risk information: Miller's monitoring/blunting coping styles among individuals (1995); Griffin, Dunwoody and Neuwirth's RISP model (1999); Brashers' uncertainty management theory (2001). Limiting this study to the four concepts of risk perception, response efficacy, self-efficacy, and source credibility does not suggest that other constructs or frameworks are not important in determining information seeking/avoiding. Instead, as a primary objective, the current study takes the perspective of an information provider and intends to inform how to design stress-related messages for college students, considering risk appeals, coping techniques, and delivery channels in order to prompt more active information searching rather

than avoiding behavior. In addition, the current study employs an experimental design to examine the causal relationship between these factors and information seeking/avoiding. The results may provide some validity support for existing models and move towards a more comprehensive information management model.

Context for the current study: stress as a public health issue

Stress, defined as “the brain’s response to any demand” by the National Institute of Mental Health (n.d.), can affect people’s overall health. The responses to stress may include anxiety, depression, anger, eating disorders, headaches, sleeplessness, and so forth. (Beiter et al., 2015; Centers for Disease Control and Prevention [CDC], 2012). While stress seems to be an inevitable part of daily life, it is becoming more prevalent and problematic among college students (Mackenzie et al., 2011). The stressors can come from the new environment, academic pressure, social demands, conflict with friends, extracurricular activities, and so forth. According to a survey conducted among more than 13,500 college students from a large midwestern university, 65% of students reported experiencing at least one stressor within the past 12 months, and an association was found between numbers of stressors experienced and rate of risk-taking behavior (Lust et al., 2013). More notably, 28% of students reported they were unable to manage their stress (Lust et al., 2013).

When individuals need help coping with stress, there are health organization websites that provide stress management recommendations. These recommendations include seeking help from clinicians, staying connected with friends and family, exercising, and so forth. There is also a large number of studies centering on the stress management for patients who are suffering from a specific health condition (e.g., cancer, heart disease) (Garssen et al., 2013). Despite the fact that there are

counseling services and stress management interventions for students who suffer from stress and pressure, for some reason, many students do not seek help from these services (Hintz, Frazier, & Meredith, 2015). According to the National Institute of Mental Health, chronic stress may lead to serious health problems, such as heart disease, high blood pressure, depression, anxiety disorders, diabetes, and other illnesses. Without help from professional health care providers or close others, college students who would have recovered from stress may ultimately develop other serious physical or mental health issues.

Given the prevalence of stress among young adults and its impact on overall health, it is important to understand how college students respond to stress and stress management messages, and why some college students avoid seeking help from others. Previous studies examining the phenomena of health information seeking and avoiding have concentrated on diseases such as breast cancer, AIDS, Alzheimer's disease, Huntington's disease, and so forth (Melnik & Shepperd, 2012). Few studies have tried to understand health information engagement in the context of mental health. Thus, there is a call for research on information seeking and avoiding in the context of mental health (e.g., stress, anxiety, depression, and so forth). Moreover, most of the health problems mentioned above have extremely negative outcomes (e.g., death) and impact a relatively small population (e.g., patients). While stress can happen to everyone in daily life, it should be considered as a significant potential health threat. Whether information avoidance exists towards such a common threat is a question this study attempts to answer.

Thus, the overarching goal of this study is to understand how to effectively communicate stress and stress management messages to college students by

examining which coping strategies (i.e., information seeking/information avoiding) college students will use after exposure to real-life stress-related information.

Research Method

Research design

An experiment is appropriate when there are “relatively limited and well-defined concepts” (Babbie, 2012, P.270). The current study intends to test the causal relationships between two independent variables (i.e., risk perception, response efficacy), two dependent variables (i.e., information seeking, information avoiding) and two potential moderators (i.e., self-efficacy, source credibility). Hypotheses and research questions are straightforward, and each investigates one relationship. As explained in the literature review, all concepts of interest are well-defined by previous studies. Therefore, an experiment is appropriate here. In addition, most existing studies examining relationships among these variables have used a survey method. The current study, however, attempts to establish causal relationships through an experimental design and advance the research line of health information seeking and avoiding. A 2 risk perception (high vs. low) × 2 response efficacy (high vs. low) × 2 source credibility (high vs. low) between-subject experiment was conducted. Prior to the main experiment, a pretest was conducted to explore if the designed stimuli work well.

There are some limitations in this experimental design. It is difficult to measure actual information seeking/avoiding behaviors. Instead, this study measured the intentions to engage in these behaviors. There are two reasons to make this compromise. It is workable to measure information seeking in a controlled lab setting by tracking participants’ browser searching history, but to the best of my knowledge, there are no valid ways to measure participants’ information avoidance after they are exposed to a message. Moreover, intention is one of the most significant predictors of behavior according to some health behavior theories (e.g.,

Theory of Reasoned Action (Ajzen & Fishbein, 1980)). By measuring self-reported intention of information seeking/avoiding, this study attempts to capture the two dependent variables as accurately as possible.

Main experiment procedure

The main experiment was conducted in a natural setting and was administrated through Qualtrics. Upon IRB approval, participants were invited to participate in the survey experiment and provided with a link to the study. The specific data collection procedure included the following steps: 1) prior to the stimuli exposure, participants were asked to evaluate their current stress level and the effectiveness of their stress management; 2) participants were random assigned to a stress and stress management message (one of eight possible stimuli; see Appendix A for details); 3) after exposure to the stimulus (at least 30 seconds), participants were asked about their intentions of information seeking/avoiding; 4) following the intention measures, participants were asked to answer questions regarding their perceptions of risk, response efficacy, self-efficacy, and source credibility; 5) participants were also asked to complete several questions regarding the characteristics of the messages, which serve as the manipulation check; and 6) following the manipulation check, demographic information was collected from participants.

Sampling procedure

For the pretest study, after receiving IRB approval, I recruited participants from the JOUR1001 Introduction to Mass Communication undergraduate class at the University of Minnesota. I first contacted participants via email and later made a study announcement in class. There were two conditions (high risk perception/high response efficacy/high source credibility and low risk perception/low response

efficacy/low source credibility) to be pretested and the total number of participants was 51.

For the main experiment, the sample was drawn from the undergraduate subject pool at the School of Journalism and Mass Communication (SJMC) at the University of Minnesota. Undergraduates enrolled in the SJMC subject pool were invited to participate in the study and received one extra credit point for participation. The total number of participants was 241 (see the results section for discussion). It was determined that at least 25 participants per condition was optimal in order to reach the minimum level to detect effects across different conditions.

Though the convenience sample may not be considered optimal due to its somewhat homogeneous nature (e.g., participants all enrolled in SJMC courses), the sample is appropriate to address the research objective of understanding how college students respond to stress-related information.

Stimuli design

There are two different levels (high vs. low) of each manipulated variable, yielding eight possible stimuli (high risk perception/high response efficacy/high source credibility, high risk perception/low response efficacy/high source credibility, low risk perception/high response efficacy/high source credibility, low risk perception/low response efficacy/high source credibility, high risk perception/high response efficacy/low source credibility, high risk perception/low response efficacy/low source credibility, low risk perception/high response efficacy/low source credibility, low risk perception/low response efficacy/low source credibility). The stimuli used in this study were generated from a CDC Features webpage (*Managing Stress*), a National Institute of Mental Health webpage (*Fact Sheet On Stress*), survey results from University of Minnesota Boynton Health Service, and an

article from the Minnesota Daily (“*Stress’ Impact On Student Mentality*”). These sources were used to design the stimuli in order to make them as accurate and authentic as possible. The differences between stimuli are only a few sentences in order to eliminate the potential noise caused by difference in the wording, message length, and so forth. All stimuli are provided in Appendix A.

Risk perception. In the high risk perception condition, the article focuses on the negative effects of stress on overall health (i.e., severity) and the high prevalence among college students (i.e., susceptibility). For the low risk perception condition, the article includes the fact that college students have higher rates of stress-related issues compared to other groups (i.e., susceptibility), but also mentions that sometimes stress can be good (i.e., severity). The length of the two messages are relatively equal, with the high risk perception condition having 123 words and the low risk perception condition containing 135 words.

Response efficacy. In the high response efficacy perception condition, some strategies such as practicing yoga and connecting socially are provided, with detail on how these tips can effectively help reduce stress. In the low response efficacy perception condition, tips for stress management are also offered but without elaboration. The lengths of two messages are different, with 110 words in the high response efficacy condition and 25 words in the low response efficacy condition. To eliminate the potential differential effects caused by exposure time (instead of the manipulated variable itself), the time for participants viewing both messages was set for at least 30 seconds.

Source credibility. In the health context, health organizations are normally perceived to have a higher credibility than general media. Thus, the messages were embedded in one of two webpages separately: one from a health organization and

one from a media organization. To make the stimuli more relatable to student participants, Boynton Health Service was chosen as the health organization and the Minnesota Daily was chosen as the media organization. Boynton Health Service is the clinic from University of Minnesota and offers all kinds of health services for college students including mental health services. The message on the Boynton Mental Health Service page was treated as the condition of high source credibility. As for the Minnesota Daily, it is a student-produced newspaper at the University of Minnesota. There are many news articles and opinions pieces addressing stress' impact on students and how to cope with it. Similar to the Boynton page, the article was embedded in the Minnesota Daily as the condition of low source credibility.

Measures

The following subsections discuss the key measurement of variables employed in this study.

Stress level. Prior to the exemplars, two questions assessing participants' current stress level and stress management ability were asked. Both questions were based on a 7-point Likert scale: "on a scale from 1 to 7, 1 being not stressed at all and 7 being very stressed, how would you rate your average level of stress in the past 30 days?" and "on a scale from 1 to 7, 1 being ineffective and 7 being effective, how would you rate your ability to manage your stress in the past 30 days?"

Information seeking. Information seeking was measured on a 5-point Likert scale ranging from "extremely unlikely (1) to extremely likely (5)" with two items previously tested based on the RISP model: "I plan to seek information about stress in the near future" and "When it comes to stress, I'm likely to get more information" (Lu, 2015; Yang & Kahlor, 2013). Participants were also given the option to learn more information about stress from several websites, including the New York Times,

the Huffington Post, Harvard Business Review, Mayo Clinic, CDC, and the American Heart Association, or not to receive more information about stress. This question was designed to further understand what sources people would turn to if they want to seek out stress information, specifically, health or general media organizations.

Information avoiding. Similar to the information seeking measures, information avoiding was also measured on a 5-point Likert scale ranging from “extremely unlikely (1) to extremely likely (5)” with two items previously tested based on the RISP model: “I refuse to learn more information about stress” and “When the topic of stress comes up again, I will ignore it” (Lu, 2015; Yang & Kahlor, 2013).

Risk perception. Risk perception was measured on a 5-point Likert scale from 1 “strongly disagree” to 5 “strongly agree”. Four items were included: “I feel that my chances of being impacted by stress are good”; “I am likely to experience stress in the future”; “the impact of stress on my well being is serious”; and “problems I would experience from stress would last a long time” (Champion, 1984).

Response efficacy. Three statements asking if the stress management recommendations provided in the article are effective in reducing stress were developed to assess response efficacy. A 5-point Likert scale was employed ranging from “strongly disagree (1)” to “strongly agree (5)”. The statements included: “The message is effective in providing strategies to reduce stress”; “Adopting the message’s recommendations would be effective in reducing stress”; and “The message includes some useful information about how to reduce stress” (Lewis, Watson, & White, 2010).

Self-efficacy. Three items on a 5-point Likert scale from “strongly disagree (1)” to “strongly agree (5)” were asked to measure self-efficacy. Respondents were asked: “In my daily life, it would be easy for me to adopt some tips provided in the message to reduce my stress”; “If I wanted to, I could easily use some tips in the message to manage my stress”; and “I could control my stress with the help of recommendations mentioned in the message”.

Source credibility. The measure of source credibility included four items measured on 7-point adjective bipolar scales: “The source of this message is inexpert (1)/expert (7); unreliable (1)/reliable (7); untrustworthy (1)/trustworthy (7); dishonest (1)/honest (7)” (Wright, 2009).

Demographic information. Participants’ demographic information regarding age, gender, and race/ethnicity was collected as well. Demographic questions were designed based on the HINTS instruments (HINTS, 2014).

Manipulation check

A manipulation check was conducted to determine whether participants perceived information about stress risk, response efficacy, and source in the stimuli. Participants were asked to identify the source of the article in a text box and answer how much they agree or disagree on a 5-point Likert scale ranging from “strongly disagree (1)” to “strongly agree (5)” with four statements. The following two statements were designed to test risk perception in terms of its two dimensions, susceptibility and severity: “The message I read indicates college students have a high prevalence of stress” and “The message I read focuses on the serious negative health outcomes of stress.” The succeeding statements were designed to test

response efficacy: “The message I read provides some detailed tips to effectively cope with stress” and “The message I read includes some clear steps to stress reduction.”

Analytic approach

Before testing the study’s hypotheses and research questions, the manipulation check was examined to determine if the stimuli work well. Cronbach’s alpha and Pearson’s r were calculated to test the internal consistency of each measure. One-way ANOVA was used to test Hypotheses 1a-1b and 2a-2b. Two-way ANOVA with interactions were used to elucidate the moderating effects of self-efficacy (Hypotheses 3a-3b); the moderating effects of source credibility (RQ1-2); and the interaction effects between risk perception and response efficacy (Hypotheses 4a-4b). However, some adjustments to data analysis strategies were made (i.e., correlation and regression analyses were used instead of ANOVA tests), which will be explained in the next section. Descriptive statistics were provided on sample demographics. Detailed information on data analysis is provided in the results section.

Results

Pretest results

I pretested two (i.e., high risk perception/high response efficacy/high source credibility and low risk perception/low response efficacy/low source credibility) of eight conditions. The high risk perception/high response efficacy/high source credibility condition comprised 52.9% ($n = 27$) of the sample while the low risk perception/low response efficacy/low source credibility condition was 47.1% ($n = 24$). Regarding the source of messages, 74.1% ($n = 20$) of the Boynton Health Clinic group accurately identified the source as Boynton. Some respondents failed to accurately specify the source (e.g., “UoM” or “web”). Similarly, 62.5% ($n = 15$) of the Minnesota Daily group accurately reported message source. Other responses included “Boynton”, “online source”, and “newspaper.”

As expected, there were differences in participants’ perception of source credibility. To be specific, the Boynton group perceived the message source to be more credible ($M = 6.23$ on a 7-point scale, $SD = .73$) than the Minnesota Daily group ($M = 5.47$, $SD = .92$), and an ANOVA test confirmed that there were statistically significant differences between two groups, $F(1, 49) = 10.413$, $p = .002$. In regard to message content, since both high and low risk perception conditions mentioned that young adults have a high prevalence of stress, there were no statistically significant differences between groups in perceptions of susceptibility to stress, $F(1, 49) = 1.603$, $p = .211$. In addition, as expected, the high risk perception group ($M = 3.22$ on a 5-point scale, $SD = 1.25$) did agree more strongly than the low risk perception group ($M = 2.62$, $SD = 1.01$) that the message focuses on the negative health outcomes of stress, and an ANOVA test confirmed the marginal significant differences $F(1, 49) = 3.454$, $p = .069$. However, regarding the manipulation of

response efficacy, the low response efficacy group ($M = 4.12$ on a 5-point scale, $SD = .68$) reported a higher level of response efficacy perception than the high response efficacy group ($M = 3.89$, $SD = 1.22$), though the differences were not statistically significant, $F(1, 49) = .704$, $p = .405$. Possible explanations for this result include the failure of the response efficacy manipulation, the small sample size, or the wording of the manipulation check question (i.e., “the message I read provides some detailed tips to effectively cope with stress”). After discussion with several experts, I made a small change to the stimuli format. Specifically, for the low response efficacy conditions, no bullet points were used to list stress management recommendations in order to make detailed recommendations less salient. In addition, another manipulation check question regarding response efficacy, “the message I read includes some clear steps to stress reduction,” was added to test if the updated stimuli work well in the main experiment. Pretest results for the manipulation check are provided in Table 1.

Table 1

Pretest Results for the Manipulation Check

Question:	Condition		P value
	High/High/High <i>M (SD)</i>	Low/Low/Low <i>M (SD)</i>	
The message I read indicates college students have a high prevalence of stress.	4.25 (1.01)	4.46 (.51)	.211
The message I read focuses on the serious negative health outcomes of stress.	3.22 (1.25)	2.62 (1.01)	.069
The message I read provides some detailed tips to cope with stress.	3.89 (1.22)	4.12 (.68)	.405
Source credibility	6.23 (.73)	5.47 (.92)	.002

NOTE: N = 51

Main experiment results

Sample description

Initially, 250 participants signed up for the study and 241 of them actually participated in the study. Since it should have taken about 10 minutes to complete the survey experiment, responses from 17 participants who spent less than 2 minutes or more than 30 minutes were excluded from further data analysis. The logic behind this action is that if participants spent too much time on the study, they might forget the message content and answer questions based on their speculation instead of their first responses after reading the message. Similarly, if participants spent too little time on the study, they might pay little attention to the message and answer questions without reading carefully. Overall, their responses were considered unreliable. In addition, there were two participants who reported their age as 17, and thus were not qualified to participate in the experiment. Their responses were deleted as well. After cleaning the data, there were 222 respondents in total.

As Table 2 below indicates, females represented 70.7% ($n = 157$) of participants, while males only accounted for 29.3% ($n = 65$). The age of participants ranged from 18-27 with one outlier of age 30 ($M = 19.96$, $SD = 1.75$) and 75.2% ($n = 167$) of respondents identified their race/ethnicity as White/Caucasian, 17.1% ($n = 38$) as Asian, 3.6% ($n = 8$) as African American, 1.4% ($n = 3$) as Hispanic/Latino, 0.9% ($n = 2$) as American Indian or Alaska Native, and 1.8% ($n = 4$) as other. There were slight variations in total group size between groups (range = 26-30). ANOVA tests confirmed that no significant differences emerged between groups for age ($F(7, 214) = .859$, $p = .540$), gender ($F(7, 214) = 1.605$, $p = .135$), and race/ethnicity ($F(7,214) = .921$, $p = .491$), indicating that participants were randomly assigned to conditions successfully.

In addition, respondents indicated they already have a relatively high stress level ($M = 5.06$ on a 7-point scale, $SD = 1.10$) and their stress management strategies are slightly effective ($M = 4.52$ on a 7-point scale, $SD = 1.37$).

Table 2

Demographic Characteristics of the Sample and Conditions Distribution

	Frequency	Percent
Gender		
Male	65	29.3%
Female	157	70.7%
Other	N/A	N/A
Age		
18	35	15.8%
19	70	31.5%
20	55	24.8%
21	30	13.5%
22	18	8.1%
23	6	2.7%
24	3	1.4%
25	1	0.5%
26	1	0.5%
27	2	0.9%
30	1	0.5%
Race/Ethnicity		
White/Caucasian	167	75.2%
African American	8	3.6%
Hispanic/Latino	3	1.4%
Asian	38	17.1%
American Indian or Alaska Native	2	0.9%
Other	4	1.8%
Conditions		
H/h/B	28	12.6%
H/l/B	26	11.7%
L/h/B	30	13.5%
L/l/B	27	12.2%
H/h/M	28	12.6%
H/l/M	27	12.2%
L/h/M	27	12.2%
L/l/M	29	13.1%

NOTE: N = 222. For conditions, upper-case letters H/L stand for high risk/low risk, lower-case letters h/l stand for high response efficacy/low response efficacy, B/M stand for Boynton Health Clinic/Minnesota Daily.

Manipulation check results

As expected (see Table 3 below), there were differences in participants' perception of message content and source credibility. No statistically significant differences were found between high risk perception and low risk perception groups regarding the susceptibility of stress, $F(1, 217) = 2.420$, $p = .121$, but differences

were found regarding the seriousness of stress, $F(1, 219) = 41.204, p < .001$. In regard to response efficacy, the high response efficacy group did agree more strongly that the message they read provides some detailed tips to effectively cope with stress ($F(1, 219) = 14.850, p < .001$), and includes some clear steps to stress reduction ($F(1, 219) = 10.247, p = .002$), than the low response efficacy group. In terms of source credibility, respondents from the Boynton group had a higher source credibility perception than the ones from the Minnesota Daily group ($F(1, 220) = 34.540, p < .001$). Overall, it appears that the manipulation was successful.

Table 3

Results for the Manipulation Check

Questions:	Condition		P value
	<u>High risk perception</u> <i>M (SD)</i>	<u>Low risk perception</u> <i>M (SD)</i>	
The message I read indicates college students have a high prevalence of stress (susceptibility)	4.33 (.670)	4.20 (.615)	.121
The message I read focuses on the serious negative health outcomes of stress (seriousness)	3.66 (.905)	2.84 (.991)	.000
	<u>High response efficacy</u> <i>M (SD)</i>	<u>Low response efficacy</u> <i>M (SD)</i>	
The message I read provides some detailed tips to effectively cope with stress (response efficacy)	3.97 (.741)	3.54 (.918)	.000
The message I read includes some clear steps to stress reduction (response efficacy)	3.95 (.781)	3.58 (.926)	.002
	<u>Boynton Health Clinic</u> <i>M (SD)</i>	<u>Minnesota Daily</u> <i>M (SD)</i>	
Source credibility	6.00 (.855)	5.27 (.990)	.000

NOTE: N = 219-222 due to missing data

Main outcome results

When examining differences in risk perception and response efficacy perception between different groups using outcome measures, no statistically significant differences were found. For the four-item measure of risk perception, ANOVA tests showed $F(1, 220) = 1.430, p = .233$; $F(1, 220) = 1.480, p = .225$; $F(1, 220) = .034, p = .854$; and $F(1, 220) = .010, p = .921$, respectively, for the comparison between high and low risk perception groups. For the three-item measure of response efficacy, ANOVA tests showed $F(1, 217) = .013, p = .910$; $F(1, 217) = .002, p = .963$; and $F(1, 217) = .034, p = .853$, respectively, between high and low response efficacy conditions. As further displayed in Table 4, though the manipulation seemed successful, the stimuli did not change participants' risk and response efficacy perceptions. Both high and low risk perception groups reported they felt they might be impacted by stress in the future, and both high and low response efficacy groups thought the message provides some effective recommendations about stress management. Therefore, further analyses regarding relationships between risk perception, response efficacy, and information seeking/avoiding are based on outcome measures instead of different conditions. Instead of ANOVA tests, correlation and regression analyses were adopted.

Table 4

Results for Main Outcome Measures

Questions:	Condition		P value
	High risk perception <i>M (SD)</i>	Low risk perception <i>M (SD)</i>	
I feel that my chances of being impacted by stress are good (susceptibility 1)	3.94 (.926)	3.79 (.921)	.233
I am likely to experience stress in the future (susceptibility 2)	4.52 (.661)	4.63 (.630)	.225
The impact of stress on my well being is serious (seriousness 1)	3.49 (1.085)	3.46 (1.018)	.854
Problems I would experience from stress would last a long time (seriousness 2)	3.12 (1.016)	3.13 (1.004)	.921
	High response efficacy <i>M (SD)</i>	Low response efficacy <i>M (SD)</i>	
The message is effective in providing strategies to reduce stress (response efficacy 1)	3.17 (.642)	3.16 (.767)	.910
Adopting the message's recommendations would be effective in reducing my stress (response efficacy 2)	3.31 (.630)	3.31 (.665)	.963
The message includes some useful information about how to reduce stress (response efficacy 3)	3.22 (.667)	3.21 (.736)	.853

NOTE: N = 219-222 due to missing data

Internal consistency check

Risk perception, response efficacy, self-efficacy, source credibility, information seeking, and information avoidance were each measured directly with multiple questions. First, as discussed above, both dependent variables (i.e., information seeking and information avoidance) were measured with two questions. The two measures of information seeking were moderately correlated ($r = .525$) and

significant at the 0.01 level. Similarly, the two measures of information avoidance were moderately correlated ($r = .524$) and significant at the 0.01 level. Second, in regard to independent variables, there were four measures of risk perception ($\alpha = .655$) (i.e., two for the aspect of susceptibility ($r = .454$), two for the aspect of seriousness ($r = .551$)), and correlations were moderate and significant at the 0.01 level. In terms of response efficacy, the three measures ($\alpha = .534$) were moderately correlated (see Table 5). Third, the three measures ($\alpha = .646$) of the proposed moderator, self-efficacy, were moderately correlated, and the four measures ($\alpha = .908$) of another proposed moderator, source credibility, were highly correlated (see Table 5). Due to the fact that several correlations between measures were not very strong, I had some concerns about combining them to create mean scores for each variable. Thus, subsequent correlational analysis is based on individual measures (see Table 5), and regression analyses are based on combined mean scores. Detailed mean scores and standard deviations of these measures are provided in Table 6.

Table 5

Correlations among Key Variables

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1. susceptibility 1	1.000																	
2. susceptibility 2	.454**	1.000																
3. seriousness 1	.236**	.337**	1.000															
4. seriousness 2	.194**	.221**	.551**	1.000														
5. response efficacy 1	-.033	.043	.056	.101	1.000													
6. response efficacy 2	-.031	-.012	-.034	.049	.321**	1.000												
7. response efficacy 3	-.057	-.041	-.069	-.075	.328**	.177**	1.000											
8. self-efficacy 1	.011	-.006	-.075	-.056	.211**	.191**	.342**	1.000										
9. self-efficacy 2	.054	-.018	.076	.013	.243**	.284**	.389**	.326**	1.000									
10. self-efficacy 3	-.006	.092	.007	.028	.381**	.370**	.509**	.385**	.426**	1.000								
11. source credibility 1	-.014	.024	.002	.084	.073	.083	.144*	.064	.110	.089	1.000							
12. source credibility 2	.062	.097	.018	.026	.042	-.002	.148*	.068	.136*	.128	.833**	1.000						
13. source credibility 3	-.011	.089	-.009	-.002	.115	-.001	.196**	.158*	.189**	.172*	.712**	.831**	1.000					
14. source credibility 4	.095	.194**	.070	.081	.116	.079	.123	.086	.167*	.171*	.604**	.688**	.756**	1.000				
15. seeking 1	.023	.134*	.397**	.367**	.023	.066	-.064	-.081	.098	.044	.170*	.153*	.151*	.202*	1.000			
16. seeking 2	.084	.118	.257**	.225**	.063	.058	.108	.012	.149*	.085	.109	.067	.107	.111	.525**	1.000		
17. avoiding 1	-.134*	-.092	-.369**	-.224**	-.087	-.062	-.065	-.025	-.165*	-.133	-.099	-.059	-.054	-.062	-.462**	-.483**	1.000	
18. avoiding 2	-.167*	-.164*	-.322**	-.221**	-.086	.032	-.025	.037	-.087	-.106	-.061	.005	-.038	-.062	-.353**	-.483**	.534**	1.000

NOTE: N = 218-222, *significant at $p < 0.05$, **significant at $p < 0.01$

Table 6

Measures Means and SDs

<u>Measures</u>	<u>Mean</u>	<u>SD</u>
Information seeking	3.05	.820
Information seeking measure 1	2.83	.987
Information seeking measure 2	3.27	.891
Information avoiding	2.30	.774
Information avoiding measure 1	2.62	.909
Information avoiding measure 2	1.99	.864
Risk perception	3.76	.645
Susceptibility	4.22	.673
Susceptibility measure 1	3.86	.924
Susceptibility measure 2	4.58	.646
Seriousness	3.30	.906
Seriousness measure 1	3.47	1.049
Seriousness measure 2	3.13	1.008
Response efficacy	3.23	.492
Response efficacy measure 1	3.16	.704
Response efficacy measure 2	3.31	.646
Response efficacy measure 3	3.21	.700
Self-efficacy	3.30	.618
Self-efficacy measure 1	3.36	.809
Self-efficacy measure 2	3.18	.815
Self-efficacy measure 3	3.35	.795
Source credibility	5.64	.993
Source credibility measure 1	5.27	1.304
Source credibility measure 2	5.67	1.091
Source credibility measure 3	5.70	1.078
Source credibility measure 4	5.92	.953

NOTE: N = 218-222 due to missing data

Associations between main outcomes and information engagement

Table 6 indicates that both dimensions of risk perception, susceptibility and seriousness, were positively associated with information seeking intention and negatively associated with information avoiding intention, which is consistent with results of previous studies (e.g., Lu, 2015; Yang & Kahlor, 2013). It is also worth noting that, in general, the seriousness dimension had greater correlations with both information engagement outcomes than the susceptibility dimension. In addition, both the response efficacy–information seeking correlation and response efficacy–information avoiding correlation were very weak. In terms of correlations between potential moderators and outcome variables, both self-efficacy and source credibility

had a weak correlation with information engagement. Response efficacy and self-efficacy were moderately correlated.

Consistent with the correlational analysis (Table 5), results from the regression analysis (Table 7 and Table 8) showed a moderate, positive relationship between risk perception and information seeking intention ($b = .441, p < .001$) and a moderate, negative relationship between risk perception and information avoiding intention ($b = -.441, p < .001$). Though not strong or statistically significant, results indicated response efficacy also had a positive relationship with information seeking ($b = .117, p = .273$) and a negative relationship with information avoiding ($b = -.136, p = .173$). In addition, effects were weak for the interaction between risk perception and response efficacy, response efficacy and self-efficacy, and source credibility and risk perception/response efficacy. Model 3 in the regression analyses controlled for age, gender, race/ethnicity, respondents' current stress level, and respondents' current stress management effectiveness. Therefore, based on the results of correlational and regression analyses, only Hypothesis 1 regarding the relationship between risk perception and information seeking/avoiding was supported. Hypotheses 2-4 were not supported. In terms of Research Questions 1-2, there were no moderating effects of source credibility on the relationship between risk perception, response efficacy, and information seeking/avoiding.

Table 7
Multivariable Regression Analysis Predicting Information Seeking

Variable	Model 1		Model 2		Model 3	
	B	SE	B	SE	B	SE
Constant	1.006*	.465	1.004*	.498	-.222	.925
Risk perception	.441***	.081	.442***	.082	.348	.363***
Response efficacy	.117	.106	.118	.119	.071	.119
Interaction between risk perception and response efficacy			.173	.152	.077	.154
Moderating effects of self-efficacy with response efficacy			.030	.132	.019	.133
Moderating effects of source credibility with risk perception			-.080	.084	-.065	.086
Moderating effects of source credibility with response efficacy			-.084	.114	-.060	.114
Current stress level					.100*	.058
Current stress management effectiveness					.034	.045
Age					.031	.031
Gender					.137	.126
Race/ethnicity					.001	.041
R ²		.125		.134		.156

NOTE: N = 218, * $p < .1$, ** $p < .01$, *** $p < .001$. Model 1 = association of risk perception, response efficacy, and information seeking. Model 2 = association of risk perception, response efficacy, interaction between risk perception and response efficacy, moderation of self-efficacy, moderation of source credibility, and information seeking. Model 3 = association of risk perception, response efficacy, interaction between risk perception and response efficacy, moderation of self-efficacy, moderation of source credibility, and information seeking, adjusting for age, gender, race/ethnicity, current stress level and current stress management effectiveness.

Table 8

Multivariable Regression Analysis Predicting Information Avoidance

Variable	Model 1		Model 2		Model 3	
	B	SE	B	SE	B	SE
Constant	4.397***	.437	4.290***	.461	4.894***	.855
Risk perception	-.441***	.076	-.418***	.076	-.348	.090
Response efficacy	-.136	.100	-.128	.110	-.081	.110
Interaction between risk perception and response efficacy			-.241	.140	-.114	.142
Moderating effects of self-efficacy with response efficacy			-.086	.122	-.059	.123
Moderating effects of source credibility with risk perception			-.077	.078	-.066	.079
Moderating effects of source credibility with response efficacy			.165	.105	.124	.105
Current stress level					.077	.053
Current stress management effectiveness					-.003	.041
Age					-.030	.028
Gender					-.210*	.116
Race/ethnicity					.002	.038
R ²		.141		.176		.198

NOTE: N = 218, * $p < .1$, ** $p < .01$, *** $p < .001$. Model 1 = association of risk perception, response efficacy, and information avoiding. Model 2 = association of risk perception, response efficacy, interaction between risk perception and response efficacy, moderation of self-efficacy, moderation of source credibility, and information avoiding. Model 3 = association of risk perception, response efficacy, interaction between risk perception and response efficacy, moderation of self-efficacy, moderation of source credibility, and information avoiding, adjusting for age, gender, race/ethnicity, current stress level and current stress management effectiveness.

Sources of health information

Respondents were also given the option to search for more information about stress from several sources, including both health and media organizations. Results showed 50.9% ($n = 113$) of respondents would choose to seek health information from the New York Times, 46.4% ($n = 103$) from the Mayo Clinic, 29.3% ($n = 65$) from the CDC, 26.6% ($n = 59$) from the Huffington Post, 26.1% ($n = 58$) from the American Heart Association, 24.8% ($n = 55$) from the Harvard Business Review, and 24.8% ($n = 55$) indicated they did not want to search for more information about stress.

Discussion

Factors affecting health information engagement

The goal of this study was to determine whether individuals' risk perception about stress and response efficacy of stress management might have an impact on their health information engagement. Overall, results show that both risk perception and response efficacy were positively correlated with information seeking and negatively correlated with information avoiding, but the magnitude of the risk perception-information engagement relationship was greater than response efficacy-information engagement relationship. A statistically significant main effect of risk perception on information engagement was detected. Those who perceived greater stress susceptibility and seriousness reported higher intentions to seek stress-related information and lower intentions to avoid it. And, those who believed the stress management strategies in the messages are effective also had higher intentions to seek and lower intentions to avoid, but the main effect was not statistically significant. These results are consistent with previous studies that have found different levels of risk perception and response efficacy can influence subsequent information engagement (Floyd, Prentice-Dunn, & Rogers, 2000; Griffin, Dunwoody, & Neuwirth, 1999; Lu, 2015; Rippetoe & Rogers, 1987; Yang & Kahlor, 2012).

Research findings also suggest there are no interaction effects between risk perception and response efficacy, moderating effects of self-efficacy, and moderating effects of source credibility on information engagement. First, since there was no significant main effect of response efficacy on information engagement, it is difficult to detect significant interaction effects between risk perception and response efficacy. One possible explanation for why there was no significant effect of

response efficacy is that people already have some knowledge of stress management in daily life, so the stress management strategies provided in the stimuli did not add to their knowledge or change their perception of stress management. In addition, the evidence indicates that though self-efficacy could play a key role in predicting people's preventive behavior, it may not be very important in predicting people's information engagement. That is, people's perception of their capability to follow the recommendations in the messages may not influence if they want to seek out or avoid more stress-related information. Last, though sources were perceived at different levels of credibility, they did not impact people's information engagement significantly. In addition, only around 50% of participants identified the message sources correctly. These results suggest that people did not pay much attention to sources and they might have focused more on content than source when they read the messages (Trumbo & McComas, 2003). According to the results of information seeking sources, it is also worth noting that if people want to search for more health information, they would likely turn to authoritative health organizations (e.g., CDC) or admittedly credible media organizations (e.g., the New York Times).

Taken together, the present findings shed some light on how to communicate about stress and stress management with college students. First, the messages should address that stress is prevalent among college students and can put their health at risk. Though people are already familiar with some stress management skills, information on how to reduce stress should also be provided in the messages. In addition, the messages can be delivered via both media (e.g., campus newspapers) and health (e.g., campus health clinic) organizations. Both channels have their own advantages. A health clinic is perceived as more credible and identified by college students easily, while a campus newspaper is more accessible on campus and can

reach a larger population. During stressful times such as midterms and finals, messages about stress management should be sent to college students via multiple channels to inform them that there are some effective ways to reduce stress, and they are always welcome to seek out clinic help.

According to the results, college students already have a relatively high level of stress. More information about stress management should be provided to help them cope with this condition. The message design strategy suggested above focuses on increasing information seeking and decreasing information avoiding. There is some evidence suggesting that information engagement is associated with the target behaviors people might perform when they are facing health risks (e.g., Griffin, Dunwoody, & Neuwirth, 1999; Kelly et al., 2010). In the study conducted by Kelly and colleagues (2010), they found that cancer information seeking was significantly and positively associated with both cancer prevention and screening behaviors, such as “exercise, fruit and vegetable consumption, weight-loss attempts, colonoscopy, the PSA test, and mammography” (p. 739). Similarly, Griffin and colleagues (1997) linked their RISP model to the well-established Theory of Reasoned Action and pointed out that risk information seeking and processing can affect the performance of preventive behaviors. One possible explanation is that information seeking can lead to consistent exposure to health information, and more exposure can lead to more information acquisition about the benefits of a behavior or self-efficacy improvement, and ultimately, stronger intention to perform the behavior. Therefore, the current study provides another strategy for health intervention campaigns—targeting information engagement instead of direct health behaviors. Through stress-related information seeking, college students may receive more guidance about how

to reduce stress during difficult times and adopt some effective stress management recommendations.

Information avoider versus information nonseeker

Though this study focuses on people's information engagement, we also need to pay attention to a population who does not engage with health information (i.e., neither seeks nor avoids information). As briefly mentioned in the literature review, there is a difference between information nonseekers and information avoiders. Information nonseekers refer to individuals who neither search for health information nor receive health information from non-healthcare providers (Ramanadhan & Viswanath, 2009), while information avoiders are individuals who actively avoid health information. For example, in the health context of cancer, an information nonseeker could be someone who is not diagnosed with cancer so there is no need to look for information actively nor refuse to receive information. On the contrary, an information avoider could be someone who is diagnosed with cancer but is too afraid of processing cancer information. Some studies have used survey methods (e.g., HINTS survey) to identify information nonseekers, who do not engage with information. In the current study, since I attempted to predict information seeking and information avoiding (rather than nonseeking per se), and thus an experimental design was employed (i.e., participants were forced to think about risk by informing them of their chance of being impacted by stress) instead of a survey. While this study tries to differentiate health information avoiders from information nonseekers, more theoretical and empirical attention to their differences is advised.

Using experimental methods in the study of information engagement

As mentioned before, one of this study's goals was to establish causal relationships between the potential factors (i.e., risk perception, response efficacy, self-efficacy, and source credibility) and information engagement. However, from the study results, we can see that the stimuli failed to change participants' perceptions of these factors, and the analytic approach was based on outcome measures instead of manipulated conditions. I offer two possible explanations for these results and a discussion on how to use experimental methods in the future study of information engagement.

First of all, stress can occur to everyone in daily life; therefore, people may already be familiar with this health problem – they know when they would feel more stressed (e.g., during midterms and finals), how long stress would last, and even some small tips about how to cope with stress. The manipulated messages are not novel enough to change these current beliefs. The fact that no statistically significant associations were found between response efficacy and information engagement may allude to that. If people believe the recommendations provided in the messages are effective, and they already have enough knowledge about stress management, then they might be less active in seeking and avoiding stress-related information. In order to explicate the relationships between risk perception, response efficacy, and information engagement more clearly, I would examine another health condition that is less known by the public, and test if similar results would be found in future research.

Another possible explanation of stimuli failure is one-time exposure. In the current study, participants were only exposed to the stimuli once. If they already have some strong beliefs about stress, we are unlikely to change these beliefs with a

single exposure. Repeated exposure to the same message could be used in a future study and determine whether this approach is more effective in changing people's perceptions about a common public health problem.

Most existing studies in information engagement research have adopted survey methods. To further advance the research line of information engagement, other research methods such as experiments should be used in future studies. And therefore, the current study, as an exploratory one, offers a foundation for strengthening causal inference between information engagement and its potential predictors, whether those used in the current study or not. To better understand these complex relationships, a series of experiments could be employed. To be specific, a first round of experiments could focus on establishing a causal relationship between a single factor and information engagement—for example, risk perception and information engagement, response efficacy and information engagement, source credibility and information engagement, and so forth. Based on these results, a second round of experiments could employ two factors—for example, risk perception and response efficacy, and determine their interaction effects on information engagement. By conducting a series of experiments step by step, we would provide clearer explanations about what factors could influence health information engagement and more strategic guidance about how to design and communicate health messages.

Limitations

There are several limitations to this study. First, though this study used an experimental method, it is a survey in nature due to the failure of manipulated stimuli. Therefore, while there are some interesting associations found, no causal relationships can be determined. Second, regression analyses adjusted for

demographic characteristics and current stress level, but there may be other important unmeasured confounders. For example, current knowledge of stress and stress management, as an important component in the RISP model, may be associated with both information seeking and information avoiding. Third, though all outcome measures are derived from existing studies, there is a concern about the reliability of these measures – several of them showed a relatively low Cronbach's alpha or bivariate correlation. This may be explained by the fact that there are few customized measures in the context of stress, so the adopted measures are derived from other health contexts. Some validity research on information engagement and stress is advised in the future. In addition, a convenience sample of college students is appropriate in this study, but the sample was somewhat homogeneous (e.g., participants all enrolled in journalism classes). The sample size was also relatively small. Therefore, the results cannot be generalized to the broader college student population.

Conclusions

In sum, this study examined several potential factors, such as risk perception, response efficacy, self-efficacy, and source credibility, that might exert an impact on health information engagement. In this way, it lays a foundation for the future study of health information engagement, especially the relatively understudied research area of health information avoidance. Using the health context of stress among college students, this study provides empirical support for the claim that risk perception can influence people's information engagement significantly, and it suggests some risk communication strategies. In addition, it sheds light on employing experimental methods in the study of health information engagement and offers several future research directions.

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Appendix A

Stimuli for Experiment

The screenshot shows the Boynton Health Service website. The header includes the University of Minnesota logo and the slogan "Driven to Discover". Navigation links for "Students", "Parents", and "UPlan Members" are visible. The main content area is titled "Mental Health Services" and features a navigation menu on the left with options like "East Bank Clinic", "Gopher Quick Clinic", "Pharmacy", "St. Paul Clinic", "After Hours Care", "Immunizations", "Billing Basics", "Student Services Fee", "Student Insurance", "Art Program", "Health Information", "Peer Health Promotion", "Public Health", "Surveys", "About Us", "Contact Us", "Employment", and "Our Staff". The main text discusses mental health issues in young adults, listing coping strategies such as working out, practicing yoga, seeking help from others, and connecting socially. It also mentions the availability of counseling options, including a Mindfulness Group. A right-hand sidebar contains sections for "Contact Us", "Hours and Locations", "Meet our staff", "Forms", and "Group Therapy Sessions".

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Office for Student Affairs > Boynton Health Service

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Boynton Health Service

Home > [East Bank Clinic](#) > Mental Health Services

East Bank Clinic
Mental Health Services

Mental Health Clinic

Recent research shows that young adults in the United States have relatively high rates of mental health problems. Compared to other age groups, prevalence of stress in the past year is highest among 18- to 25-year-olds. College students tend to worry most about their future career, school, and friends. While everyone experiences stress at times, a prolonged bout of it can lead to heart disease, high blood pressure, diabetes, depression, anxiety disorders, and a change in one's overall health. Thinking about school and life after college is surely important for students, but it does not have to be a rat race. With the right perspective and methods for coping with stress, students can learn how to manage their stress without feeling overly burdened.

Some popular methods that students use to manage their stress levels during challenging times include:

- Working out: Working out is a great way to release endorphins in the brain, which can improve your perspective about yourself and your outlook toward the world.
- Practicing yoga: Yoga is a great weapon against stress because it uses breathing and meditation to relax the mind and muscles.
- Seeking help from others: By finding a sympathetic ear and sharing your experiences with stress, not only will you find that you're not alone, but you may even learn additional strategies for stress reduction.
- Connecting socially: Spending time with family and friends can provide much-needed social support.

Boynton Health Service also offers a variety of counseling options for students. One of these options that students might find most helpful is the Boynton Mindfulness Group, which "helps people explore methods for handling stress through mindful awareness." According to the Mayo Clinic, mindfulness is defined as focused, deliberate attention to a task or thought to quiet the mind and eliminate distractions. Group sessions of the Mindfulness Group at Boynton include meditation strategies and lessons on the difference between responding to stress and reacting to stress.

Contact Us
Mental Health Clinic
612-624-1444 Information and Appointments

[Cancellation policy](#)

Hours and Locations
To view the clinic's service hours, see [Hours and Locations](#).

Meet our staff
[Meet the Mental Health Clinic providers](#)

Forms
[Intake Assessment Form](#) (PDF)
Please complete this form and bring it with you to Boynton's Mental Health Clinic in order to schedule your first appointment.
[Release of Information Form](#) (PDF)
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Group Therapy Sessions
Boynton offers a number of [therapy groups](#) concerning: relationship and social confidence building; alcohol, anxiety and eating disorder awareness; managing emotions; and increasing mindfulness.

Find us on Facebook
@boyntonhealth

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East Bank Clinic

Mental Health Services

Mental Health Clinic

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Contact Us

Mental Health Clinic
612-624-1444 Information and Appointments

[Cancellation policy](#)

Hours and Locations

To view the clinic's service hours, see [Hours and Locations](#).

Meet our staff

[Meet the Mental Health Clinic providers](#)

Forms

[Intake Assessment Form \(PDF\)](#)
Please complete this form and bring it with you to Boynton's Mental Health Clinic in order to schedule your first appointment.

[Release of Information Form \(PDF\)](#)
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The image shows a screenshot of the Boynton Health Service website. At the top, there is a navigation bar with the University of Minnesota logo and the slogan "Driven to Discover". Below this, there are links for "Office for Student Affairs > Boynton Health Service" and "Students | Parents | UPlan Members". The main header reads "Boynton Health Service" with a search bar on the right.

The page content is organized into several sections:

- Left Sidebar:** A vertical menu with links to various services: East Bank Clinic, Gopher Quick Clinic, Pharmacy, St. Paul Clinic, After Hours Care, Immunizations, Billing Basics, Student Services Fee, Student Insurance, Art Program, Health Information, Peer Health Promotion, Public Health, Surveys, About Us, Contact Us, Employment, and Our Staff. At the bottom of the sidebar are social media links for Facebook and Twitter (@boyntonhealth).
- Breadcrumbs:** "Home > East Bank Clinic > Mental Health Services".
- Section Header:** "East Bank Clinic Mental Health Services".
- Main Content:**
 - Mental Health Clinic:** A paragraph explaining that recent research shows young adults in the US have high rates of mental health problems. It discusses stress and provides coping strategies.
 - Some popular methods that students use to manage their stress levels during challenging times include:
 - Working out: Working out is a great way to release endorphins in the brain, which can improve your perspective about yourself and your outlook toward the world.
 - Practicing yoga: Yoga is a great weapon against stress because it uses breathing and meditation to relax the mind and muscles.
 - Seeking help from others: By finding a sympathetic ear and sharing your experiences with stress, not only will you find that you're not alone, but you may even learn additional strategies for stress reduction.
 - Connecting socially: Spending time with family and friends can provide much-needed social support.
 - Boynton Health Service also offers a variety of counseling options for students. One of these options that students might find most helpful is the Boynton Mindfulness Group, which "helps people explore methods for handling stress through mindful awareness." According to the Mayo Clinic, mindfulness is defined as focused, deliberate attention to a task or thought to quiet the mind and eliminate distractions. Group sessions of the Mindfulness Group at Boynton include meditation strategies and lessons on the difference between responding to stress and reacting to stress.**
- Right Sidebar:**
 - Contact Us:** "Mental Health Clinic 612-624-1444 Information and Appointments". Includes a link to "Cancellation policy".
 - Hours and Locations:** "To view the clinic's service hours, see [Hours and Locations](#)."
 - Meet our staff:** Includes a link to "Meet the Mental Health Clinic providers".
 - Forms:**
 - [Intake Assessment Form \(PDF\)](#): "Please complete this form and bring it with you to Boynton's Mental Health Clinic in order to schedule your first appointment."
 - [Release of Information Form \(PDF\)](#): "If you would like to authorize another person to have access to your Mental Health Clinic medical records, please complete this form and turn it in to the Mental Health Clinic check-in-desk."
 - Group Therapy Sessions:** "Boynton offers a number of [therapy groups](#) concerning: relationship and social confidence building; alcohol, anxiety and eating disorder awareness; managing emotions; and increasing mindfulness."

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Boynton Health Service

Home > [East Bank Clinic](#) > Mental Health Services

East Bank Clinic
Gopher Quick Clinic
Pharmacy
St. Paul Clinic

Mental Health Services

Mental Health Clinic

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Contact Us

Mental Health Clinic
612-624-1444 Information and Appointments

[Cancellation policy](#)

Hours and Locations

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Meet our staff

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Call us: 612-378-6710

Follow us on Instagram [instagram.com/pagodareytown](#)

OPINION » COLUMNS

Stress' impact on student mentality

Recent research shows that young adults in the United States have relatively high rates of mental health problems. Compared to other age groups, prevalence of stress in the past year is highest among 18- to 25-year-olds. College students tend to worry most about their future career, school, and friends. While everyone experiences stress at times, a prolonged bout of it can lead to heart disease, high blood pressure, diabetes, depression, anxiety disorders, and a change in one's overall health. Thinking about school and life after college is surely important for students, but it does not have to be a rat race. With the right perspective and methods for coping with stress, students can learn how to manage their stress without feeling overly burdened.

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JESSICA LANG DANCE

Feb 13



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OPINION » COLUMNS

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Appendix B

Main Survey Experiment

INFORMATION SHEET FOR RESEARCH

You are invited to be in a research study about managing stress. You were selected as a possible participant because you enrolled in the SJMC undergraduate subject pool. You must be 18 - 30 years old to participate. We ask that you read this form and ask any questions you may have before agreeing to be in the study.

Procedures:

If you agree to be in this study, we would ask you to do the following things: read a message about stress among college students; and complete a questionnaire after reading the message. You will also be asked some demographic questions. The tasks will take about 10 minutes to complete.

Confidentiality:

The records of this study will be kept private. In any sort of report we might publish, we will not include any information that will make it possible to identify a subject. Research records will be stored securely and only researchers will have access to the records.

Voluntary Nature of the Study:

Participation in this study is voluntary. Your decision whether or not to participate will not affect your current or future relations with the University of Minnesota. If you decide to participate, you are free to not answer any question or withdraw from the study at any time without affecting those relationships.

Contacts and Questions:

The researcher conducting this study is: Weijia Shi. You may ask any questions you have by contacting her at 300 Murphy Hall, (612)-625-8370, shixx589@umn.edu. If you have any questions or concerns regarding this study and would like to talk to someone other than the researcher, you are encouraged to contact the Research Subjects' Advocate Line, D528 Mayo, 420 Delaware St. Southeast, Minneapolis, Minnesota 55455; (612) 625-1650.

Please indicate below if you wish to continue with the study.

- I give my consent to participate in the study and wish to continue.
- I do not give my consent to participate in the study and do not wish to continue.

Thank you for participating in this study!

There are no correct or incorrect answers to the questions in this survey; it's really your opinion that matters. Remember that your first responses are usually the most accurate.

Q1 On a scale from 1 to 7, with 1 being not stressed at all and 7 being very stressed, how would you rate your average level of stress in the past 30 days? (Please check the appropriate number that corresponds with your average level of stress)

Not stressed at all 1 2 3 4 5 6 7 Very stressed

Q2 On a scale from 1 to 7, with 1 being ineffective and 7 being very effective, how would you rate your ability to manage your stress in the past 30 days? (Please check the appropriate number that corresponds with your effectiveness in managing stress)

Ineffective 1 2 3 4 5 6 7 Effective

On the next page you will see a message about stress among college students. Please read the story. Once you are done reading the story, click on the arrows in the lower right-hand corner. Please note that once you continue the survey, you cannot go back to the message.

Insert Stimulus Here

Q3 Please indicate how likely or unlikely you are to perform the following behaviors:

	Extremely unlikely	Unlikely	Neutral	Likely	Extremely likely
I plan to seek information about stress in the near future	<input type="radio"/>				
When the topic of stress comes up again, I will ignore it	<input type="radio"/>				
I refuse to learn more information about stress	<input type="radio"/>				
When it comes to stress, I'm likely to get more information	<input type="radio"/>				

Q4 Below, you are given the option to learn more information about stress from several websites. Please select which one you would browse (select all that apply).

- I do not wish to learn more information about stress
- Reducing the Stress on Students from The New York Times
(<http://www.nytimes.com/2016/01/13/opinion/reducing-the-stress-on-students.html>)
- What is Stress Management? from American Heart Association
(http://www.heart.org/HEARTORG/HealthyLiving/StressManagement/FightStressWithHealthIs-Stress-Management_UCM_321076_Article.jsp#.VrFwxjYrJjU)
- Help Your Team Manage Stress, Anxiety, and Burnout from Harvard Business Review
(<https://hbr.org/2016/01/help-your-team-manage-stress-anxiety-and-burnout>)
- Healthy Lifestyle- Stress Management from Mayo Clinic
(<http://www.mayoclinic.org/healthy-lifestyle/stress-management/basics/stress-basics/hlv-20049495>)
- Mind Your Toes, Manage Your Stress from The Huffington Post
(http://www.huffingtonpost.com/mark-bertin-md/mind-your-toes-manage-your-stress_b_9019122.html)
- Managing Stress- Find out how to manage stress by following CDC's recommended tips for self-care
(<http://www.cdc.gov/features/handlingstress/>)

Q5 Please indicate if you agree or disagree with the following statements:

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
I feel that my chances of being impacted by stress are good	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Problems I would experience from stress would last a long time	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The impact of stress on my well being is serious	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am likely to experience stress in the future	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q6 Thinking about the message you just read, please indicate if you agree or disagree with the following statements:

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
The message is effective in providing strategies to reduce stress	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Adopting the message's recommendations would be effective in reducing my stress	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
If I wanted to, I could easily use some tips in the message to manage my stress	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
In my daily life, it would be easy for me to adopt some tips provided in the message to reduce my stress	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The message includes some useful information about how to reduce stress	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I could control my stress with the help of recommendations mentioned in the message	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q7 Below, please indicate the source of the message you just read (i.e. where did the message appear):

Q8 The source of this message is:

inexpert	<input type="radio"/>	expert						
unreliable	<input type="radio"/>	reliable						
untrustworthy	<input type="radio"/>	trustworthy						
dishonest	<input type="radio"/>	honest						

Q9 Thinking about the message you read earlier, please indicate if you agree or disagree with the following statements:

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
The message I read indicates college students have a high prevalence of stress	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The message I read focuses on the serious negative health outcomes of stress	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The message I read provides some detailed tips to effectively cope with stress	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The message I read includes some clear steps to stress reduction	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q10 What is your age?

Q11 What is your gender?

- Male
- Female
- Other

Q12 How do you describe your ethnicity/race?

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

This concludes the survey. Please note the message you just read was created based on an article from the Minnesota Daily (<http://www.mndaily.com/2012/10/16/stress%E2%80%99-impact-student-mentality>) and a CDC webpage about stress (<http://www.cdc.gov/features/handlingstress/>). Your participation in this study will help better understand how college students respond to different stress management messages.

Thank you for your participation!