DIGITALCOMMONS
@WAYNESTATE

Wayne State University

Wayne State University Dissertations

1-1-2014

Social Comparison And Information Seeking: College Students' Sexual Health Information Management In The Context Of Online Support Groups

Jehoon Jeon
Wayne State University,

Follow this and additional works at: http://digitalcommons.wayne.edu/oa_dissertations

 Part of the Communication Commons

Recommended Citation

Jeon, Jehoon, "Social Comparison And Information Seeking: College Students' Sexual Health Information Management In The Context Of Online Support Groups" (2014). *Wayne State University Dissertations.* Paper 1013.

This Open Access Dissertation is brought to you for free and open access by DigitalCommons@WayneState. It has been accepted for inclusion in Wayne State University Dissertations by an authorized administrator of DigitalCommons@WayneState.

SOCIAL COMPARISON AND INFORMATION SEEKING: COLLEGE STUDENTS' SEXUAL HEALTH INFORMATION MANAGEMENT IN THE CONTEXT OF ONLINE SUPPORT GROUPS

by

JEHOON JEON

DISSERTATION

Submitted to the Graduate School

of Wayne State University,

Detroit, Michigan

in partial fulfillment of the requirements

for the degree of

DOCTOR OF PHILOSOPHY

2014

MAJOR: COMMUNICATION

Approved by:

_____

Advisor Date

_____

_____

_____

_____

© COPYRIGHT BY

JEHOON JEON

2014

All Rights Reserve

DEDICATION

I would like to dedicate this dissertation to my family

for their love, encouragement, and unconditional support.

I can never express how much you all mean to my life.

ACKNOWLEDGEMENTS

I could not have come this far without all the help and support from numerous people. So, I would like to devote these acknowledgements to appreciate their supports.

First and foremost, I would like to thank my advisor, as well as my lifetime mentor, Dr. Pradeep Sopory, for his incredible support, advice, and love during my doctoral training. I was extremely lucky and honored to have been advised by him. He was always available to make me keep staying on course. His insights and suggestions combined with extensive knowledge always have provided a clear guidance on my research ideas. His positive belief in me allowed me to overcome my writing obstacles as a non-native English writer, too. As I see him caring his advisees and students with his heart, I was able to follow his way to grow up in the academia. Although no words can fully express my gratitude, I was very pleased to have him as my advisor and I appreciate all of his assistance during my doctoral training.

I also would like to show my extensive gratitude to the members of my dissertation committee members: Dr. Katheryn Maguire, Dr. Frederick Vultee, Dr. Stephanie Tong, and Dr. Julie Gleason-Comstock. With their sincere support and advice to improve this research project, I was able to complete this dissertation. I would like to appreciate them for refining my dissertation and providing such a great discussion in my dissertation defense. From their classes, research meetings, advices, and casual conversations over the years, I also learned a lot and I was pleased to have the opportunities to work with these professors. They have been always interested in my academic development and helped me consider diverse options of future career in the academia.

I truly could not have done this research without the support of fellow graduate students at Room 508: Steve, Sungmi, Sadaf, Sherri, Daria, Renata, Lynn, Nathan, Keith, and Rebecca.

Commuting together, working together, collecting data together, and having a lot of academic conversations together, I was able to enjoy the graduate program with my academic brothers and sisters. I remember the day when my desk was surprisingly covered with mountain-high gifts for my newborn baby. I have appreciated the opportunity to come to Wayne State University, met these incredible people, and enjoyed a wonderful academic experience. Furthermore, I also would like to appreciate my Korean friends and families in Ann Arbor, Chung family in Rogers City, and neighbors at Valley Ranch. Jack, Lizza, and Jennifer have been very interested in my academic career and fully supported my family when we explore our paths.

Lastly but not least, I also want to thank my parents and in-laws for their love, support, and encouragement throughout the graduate program. They have believed in me and taught me what the most important thing in life is. The most sincere and heartfelt thanks are due my wife, Dr. BoRin Kim. Without her constant encouragement and incredible support, I was not able to complete this journey. Thank you for being so supportive and patient all the time. Jiyoo and Namu also deserve a tremendous deal of thanks. Having these wonderful, supportive, and encouraging family members allowed me to have confidence on my academic career.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

CHAPTER 1

Introduction

Statement of the Problem

College students engage in a range of risky sexual activities and are at a high risk of acquiring sexually transmitted infections (STIs) due to a combination of biological, behavioral, social, and cultural reasons (Hou, 2009; Patel, Zochowski, Peterman, Dempsey, Ernst, & Dalton, 2012). Despite numerous prevention campaigns, college students do not consistently practice safe sex (Davis, Sloan, MacMaster, & Kilbourne, 2007; Holland & French, 2012). For example, American College Health Association (ACHA; 2005) reported that only about 18% of college students always use condoms and about 33% never use condoms. In addition to the lack of condom use, college students also engage in other risky sexual behaviors, such as having multiple sex partners, serial monogamy, and combining drugs and alcohol with sexual activity (Lewis, Miguez-Burbano, & Malow, 2009). Moreover, college students face multiple barriers to access high quality preventive services in that they lack health insurance, have financial difficulties to pay for it, feel discomfort with adult-oriented facilities and services, and worry about confidentiality (Centers for Disease Control and Prevention [CDC], 2011). As a result, college students are at a high risk of serious sexual health problems, particularly STIs (Kanekar & Sharma, 2010).

To manage the uncertainty and anxiety associated with high risk of STIs, college students frequently use the Internet to find information about sexual health. Researchers have shown that 76.5% of college students have sought sexual health information from the Internet (Buhi, Daley, Fuhrmann, & Smith, 2009). The same researchers also noted that in contrast only 35.3% of college students have sought sexual health information from health care providers and 32.4% of

them have sought such information from friends and family members. In terms of the topics of sexual health information, these researchers have noted that STIs, including Human Immunodeficiency Virus (HIV) and Acquired Immunodeficiency Syndrome (AIDS), was the most common sexual health topic that college students have searched on the Internet followed by information about male and female genitalia, birth control, and contraceptives. What this research highlights is that college students tend to obtain sexual health information from the Internet, instead of discussing their issues with healthcare providers, partners, family members, or peers, because it allows them to remain anonymous. Since sexual health is a sensitive topic to discuss with other people, college students perceive the Internet as the most comfortable source of sexual health information. This finding is in line with other research showing that college students consider the Internet as the most useful source of information about sensitive and embarrassing topics (Rietmeijer, Bull, McFarlane, Patnaik, & Douglas, 2003).

Among the varied sources of sexual health information available online, one of the key sites is user-created messages shared in online support groups. Considering that the "wisdom of crowds" generates a wealth of knowledge on almost every issue (Surowiecki, 2004) and folk wisdom has offered benefits for recovery from serious illness (Cousins, 1977), cumulative and collaborative messages produced by a large number of online support group users provide practical knowledge about sexual health. Thus, personal experiences created and shared by other online support group users (e.g., the experience of symptoms, diagnosis, disease progression, medication and treatment, side effects of treatment, daily experiences of living with the infections, and the long-term consequences of treatment) offer information users a knowledge archive on diverse sub-topics. Moreover, effective search tools and high health information literacy among contemporary online support group users enables them to search for and extract

the information they exactly need in an effective and efficient manner (Nambisan, 2011). Users of online support groups can narrow a search and obtain required information tailored to their specific needs to reduce uncertainty and cope with anxiety about their concerns. Additionally, the interactive aspects of online support groups allow members to commonly reciprocate and share their own experiences as a response to a story shared or question asked by other people in a similar situation (Attard & Coulson, 2012). Online support groups also fulfill the unique needs of their users by having informal sessions that help members exchange experiences and advice on specific topics of mutual interest (Demiris, 2006; Tanis, Das, & Fortgens-Sillman, 2009).

Since Internet users seeking health information often navigate an overwhelming volume of information scattered across multiple sources, researchers have investigated how they actively manage information about specific health issues (e.g., how information users integrate personal health-related information, manage the integrated information to make health-related decisions, and learn from other people in order to understand the results of the decisions). One such effort has been made by Afifi and Weiner (2004), who developed the theory of motivated information management (TMIM) to examine the information management process. Similar to other theories of uncertainty management, such as uncertainty reduction theory (Berger & Calabrese, 1975) and uncertainty management theory (Brashers, 2001), the TMIM assumes that people communicatively manage the uncertainty faced in important situations by seeking further information actively. Characterizing individuals as active information seekers, the TMIM has accounted for how information users interpret the uncertainty in a situation that produces negative emotional responses (e.g., anxiety) and how their evaluation of outcome expectancy and efficacy are associated with a decision to seek or avoid additional information about the situation (Brashers, Goldsmith, & Hsieh, 2002). Afifi and Weiner (2004) also propose that perception of

coping efficacy (the extent to which individuals believe they have the resources to manage the process), communication efficacy (the extent to which individuals have skills to complete the communication tasks), and target efficacy (the extent to which an information target is able and willing to provide complete information) primarily influence the information management decisions.

Purpose of Present Research

The purpose of this dissertation is to investigate college students' information seeking process with regards to sexual health information. Using the theoretical framework of the TMIM and social comparison theory, this study tests the information management process, but also extends it in three ways that provide a substantive contribution to the literature.

First, in the context of processing personal information about sexual health of others, the study tests the TMIM model to explain how college students manage sexual health information shared by others in online support groups. Although the TMIM successfully addresses individuals' cognitive process to communicate and cope with a health-related issue within interpersonal encounters, previous TMIM studies have only tested individuals' willingness to seek further information from several interpersonal interactions (e.g. family members, relational partners, and close relationships). That is, little TMIM research has so far been conducted to explain the information management process related to information derived in the online context from interpersonal sources in online support groups. As a relatively recent theory in the communication literature, the TMIM still requires more work to be done to test the model in diverse contexts and environments (Afifi & Afifi, 2009). Therefore, in the situation where college students actively search for sexual health information shared by other members in online support groups to obtain useful knowledge as well as comfort, encouragement, and emotional

relief, this dissertation illuminates how the TMIM can explain the process of college students' sexual health information seeking in online settings.

Second, this study extends the TMIM framework by examining the role of social comparison information and its corresponding processing in the model. Specifically, the study looks at sexual health information shared by others in online support group that serves as social comparison information (e.g., the experience of symptoms, diagnosis, disease progression, medication and treatment, side effects of treatment, daily experiences of living with the infections, and the long-term consequences of treatment). According to Wood, Taylor, and Lichtman (1985), people with a medical issue often select comparison targets who are similar to them as such comparisons provide diagnostic information about their health issues. Considering that online support groups work as important repositories of health information that include a huge volume of case-specific messages shared by others in similar situations, online support group users are exposed to the opportunity to compare their own situation with others' experiences (Shaw, McTavish, Hawkins, Gustafson, & Pingree, 2000). When exposed to the comparison information in online support groups, people can be reassured by learning that their situation could be worse (other people are worse off than my situation) or they can be inspired by discovering that their situation could be better (I can make it through as others did) (Salovey, Rothman, & Rodin, 1998). Although the benefits of online support groups and the process of information management in health contexts have been widely investigated, little is known about the cognitive mechanism that underlies the process whereby information users manage their uncertainty by using comparative information available through the posts created by online support group members. Since online support group information users are able to search for diverse case-specific personal stories of other online support group members, which enables

them to compare themselves with other online support group users regarding diagnosis, disease progression, medication and treatment, side effects of treatment, daily experiences of living with the infections, and the long-term consequences of treatment, the TMIM model should more sufficiently explore how these people strategically deal with comparative information to manage their uncertainty or anxiety about the health issue.

Third, considering the information seeking as a cyclical process over the long them, rather than a one-time event, this study investigates how cognitive re-assessments affect the information management process. Although Afifi and Weiner (2004, p183) suggested "cognitive reappraisal" as one of the information management options in the decision phase, previous TMIM researchers have provided limited explanation about how information seeking in the initial phase is related to cognitive re-assessments and how these cognitive re-assessments are associated with the subsequent information management process. As such, instead of using a single analytical framework that explains the overall information management process, this dissertation divided the current TMIM model into two separate information management processes. Reflecting that contemporary information users consistently seek user-created messages shared in online support groups (Jessop, Cohen, Burke, Conti, & Black, 2004; Nambisan, 2011), the current TMIM framework requires more explanation about how online support group users experience cognitive re-assessments after the initial information seeking and how these cognitive re-assessments influence the following information management decisions.

Structure of Dissertation

This dissertation contains the following chapters after this first introduction chapter. Chapter 2 presents a thorough literature review of college students' sexual health, online social support groups, theory of motivated information management, and social comparison. Chapter 3

proposes the study rationale and the hypotheses and research questions that comprise the current TMIM model and the extended TMIM model developed in this study. Chapter 4 describes the methodology of the study for testing the hypotheses and research questions as part of the extended TMIM model. Chapter 5 reports the statistical results of the study that tested hypotheses and research questions proposed in Chapter 3. Finally, Chapter 6 discusses the findings, draws conclusions for theoretical and practical implications, and provides directions for future research studies.

CHAPTER 2

Literature Review

This dissertation explores the role of social comparison in college students' information management process when they search for sexual health information from online support groups. This chapter describes prior work on the related subjects and highlights important unanswered questions. The review of literature includes the following subsections. First, college students' risky sexual health behaviors and their online information seeking about sexual health will be introduced. Second, considering that user-generated information among online support groups provides valuable information for information users, online social support literature will be reviewed. Third, focusing on information users' information management strategies, previous literature about the TMIM will be summarized. Fourth, to verify the role of social comparison in the information management process, the final subsection summarizes the previous literature about social comparison.

College Students' Sexual Health and Online Sexual Health Information

Sexually transmitted infections (STIs) are diverse types of infections that are contracted through intimate or sexual contact between sexual partners (Wildsmith, Schelar, Peterson, & Manlove, 2010). Centers of Disease Control and Prevention (CDC; 2013) noted that STIs are hidden public health problems that lack easy solutions because they are rooted in human behavior, fundamental societal problems, and not openly confronted. CDC (2011) declared that there are more than 19 million new STIs, such as Chlamydia and gonorrhea, each year in the United States. In addition to the reported STIs, researchers assume that more than 65 million new cases of un-reported STIs, such as human papillomavirus (HPV; genital warts) and genital herpes, occur every year (CDC, 2011). Although STIs affect individuals of every age and

education level, the spread of STIs is a serious public health problem especially among young adults aged 20-24 years and adolescents aged 15-19 years (Weinstock, Berman, & Cates, 2004; Wildsmith, Schelar, Peterson, & Manlove, 2010). Furthermore, these researchers also showed that STIs are steadily increasing among these age groups. Approximately half of all new STIs in the United States occur among adolescents and young adults while they represent only 25 percent of the United States population (CDC, 2011).

In particular, researchers have highlighted that college students are at a high risk of acquiring STIs due to the combination of biological, behavioral, social, and cultural reasons (Hou, 2009; Patel, Zochowski, Peterman, Dempsey, Ernst, & Dalton, 2012). Since sexual relationships are considered a central developmental milestone for young people (Arnett, 2007), it is not surprising that sexual activities among college students increase and many students are engaged in intercourse with multiple partners (Page, Hammermeister, & Scanlan, 2000; Reinisch, Hill, Sanders, & Ziemba-Davis, 1995). For example, Weinberg, Lottes, and Shaver (1995) showed that male undergraduate students had an average of three and female undergraduate students had an average of two sexual partners a year. Moreover, while awareness about the risks of sexual activity has grown in the past decades, researchers have shown that college students do not consistently practice safe sex (Holland & French, 2012; Davis, Sloan, MacMaster, & Kilbourne, 2007). American College Health Association (ACHA; 2005) reported that about 33% of college students never used condoms whereas just 18% always used condoms. In addition to the inconsistent condom use, college students also engage in risky sexual behaviors, such as having multiple sex partners, serial monogamy, and combining drugs and alcohol with sexual activity (Lewis, Miguez-Burbano, & Malow, 2009). In sum, in spite of numerous health campaigns aimed to prevent STIs among college students and improve their sexual health, STIs

continue to be a severe health-related issue for college campuses and college students' sexual health has become one of the major public health challenges (Kanekar & Sharma, 2010).

Given the above, it is not surprising that college students do actively seek information about sexual health. For example, researchers have found that 76.5% of college students have sought information about sexual health from online sources (Buhi, Daley, Fuhrmann, & Smith, 2009). Among diverse topics that college students seek from the Internet, STIs-related information was the most common sexual health topic, followed by male or female genitalia, birth control, and contraceptives. This finding is in line with results from previous information seeking studies in that people who perceive uncertainty about an important issue actively seek information to clarify the uncertainty (Babrow, 2001; Berger & Calabrese, 1975; Brashers, 2001; Brashers, Goldsmith, & Hsieh, 2002). Furthermore, although interpersonal sources have been traditionally known as important health information avenues for young adults (Keller, Labelle, Karimi, & Gupta, 2002), college students often prefer to obtain sexual health information from the Internet as it allows them to remain anonymous. Instead of discussing with healthcare providers, partners, family members, or peers, college students consider the Internet as the most useful source of information about sensitive and embarrassing topics, such as sexual health information (Rietmeijer, Bull, McFarlane, Patnaik, & Douglas, 2003). This trend is in accord with other research showing that health information users consider the Internet as the world's largest medical library (Morahan-Martin, 2004). Madden and Rainie (2003) reported that approximately 6 million people in the United States searched for health information from online sources, and this usage exceeds the daily average number of Americans who make ambulatory care visits to hospital (2.75 million) and physician office visits (2.27 million).

Online Support Groups as Source of Sexual Health Information

In the context of the large and growing number of people getting health information through the Internet, researchers have studied several online health information sources, such as health websites, online support groups, and online interactions with health professionals (Cline & Haynes, 2001; Jones & Biddlecom, 2011; Rice, 2006; Wang, Walther, Pingree, & Hawkins, 2008). Considering that the Internet has become the world's largest source of health and medical information (Morahan-Martin, 2004), Rice (2006, p.8) notes that "using the Internet for health and medical information has a variety of advantages (availability of a wide array of information, interpersonal interaction and social support, tailored information, anonymity), disadvantages (cost, technical language, unequal access), obstacles (overload, disorganization, complex searching commends and medical language, impermanence), and dangers (lack of peer review, inaccurate or misleading information, risk-promoting messages, online reinforcement of pathologies, addiction)."

Although there are diverse sources of sexual health information on the Internet, this dissertation focuses on the user-created information available via online support groups for the following three reasons. First, researchers have emphasized the importance of informational support function of online support groups in that online support group members consider these sites as the most useful source of information about treatments (Jessop, Cohen, Burke, Conti, & Black, 2004; Nambisan, 2011). Considering that the wisdom of crowds can possibly generate information on almost every issue (Surowiecki, 2004), online support groups provide a cumulative and collaborative information contributed by a large number of lay people, which was previously available only through experts or close relationships. This nature of informational support via online support groups can be explained as social capital, in that lay people's folk wisdom offers benefits to those who are experiencing illness (Cousins, 1977). Social capital has

been defined as a common set of expectations, a set of shared values, and a sense of trust among people (Coleman, 1988), which allows both the individuals and the community to accomplish more than an individual's physical and mental capacities (Putnam, 2000). That is, in case of online support groups, the members and information users of online support groups represent potential resources of health information (Katz & Rice, 2002). Considering the growth of health information resources, informational support through online support groups provides unlimited amount of health information that is not provided by face-to-face relationships or the use of traditional media (Johnsen, 2003; Magdol & Besser, 2003).

Second, while both health websites and online support groups provide health information, the interactive features of online support groups promote better outcomes for the users in their information seeking efforts. By having informal sessions that help members discuss specific topics of mutual interest, online support groups fulfill the informational needs of their users (Demiris, 2006; Tanis, Das, & Fortgens-Sillman, 2009). That is, online support group users are able to talk openly with anonymous others in similar situations, obtain disease-related knowledge from them and share their own illness experiences. When people use online support groups to interact with others who are in a similar situation, they perceive a much more sense of understanding about the issue than if they obtained information from other social networks (Rice, 2003; Till, 2003; Winzelbert, Classen, & Alpers, 2003). Since user-created messages in online support groups often contain similar situations and experiences of a specific disease shared by other members, information users are able to obtain indirect experiences of the disease that they may have to go through (Uchino, Cacioppo, & Kiecolt-Glaser, 1996).

Third, effective and efficient searching tools enable information users to search and extract the information they exactly need (Nambisan, 2011). According to the Pew Internet and

America Life Project, people tend to search for online health information by going online "without a definite research plan" (Horrigan & Rainie, 2002, p. 4). Information users typically start at a search engine when they face a health-related issue and visit two to five recommended search results during an average visit. Thus, information users purposely narrow a search and obtain required information to reduce uncertainty and cope with anxiety about their concerns. Taking this information literacy of online health information users into consideration, people purposely seek informational support shared by others in online support groups (e.g., other people's experiences and narratives about the health issue) to reduce uncertainty and cope with anxiety about their health-related issues.

Since online support group users are able to talk openly in an anonymous manner with others facing similar health situations and obtain related knowledge, researchers have pointed out that online support group users consider health information shared by other online support group members as the most useful source of information about a disease (Jessop, Cohen, Burke, Conti, & Black, 2004; Nambisan, 2011). In particular, by comparing themselves with others who face similar health challenges, online support group users gauge the appropriateness of their feelings given the situation (Bunde, Suls, Martin, & Barnett, 2006), obtain disease-related information for self-management (Campbell, Phaneuf, & Deane, 2004; Frost & Massagli, 2008; Kulik & Mahler, 2000), and receive emotional support (Zrebiec & Jacobson, 2001). Considering the advent of online support groups and information users' preference for using online support groups as source of health information, the next subsection will review the literature on online social support.

Online Social Support

A Pew Internet Research Institute (2007) reported that at least 36 million people in the

United States were members of online support groups that help them manage personal issues or health problems. Compared to traditional face-to-face support groups, online support groups provide diverse opportunities for members to exchange emotional and informational support with other users in similar life situations who do not live nearby. Walther and Boyd (2001) suggested that people are motivated to receive social support in online environment due to diverse features of computer-mediated communication, such as convenience, anonymity, accessibility, interaction management, and social distance. Whereas people might be embarrassed requesting social support in face-to-face settings, they are able to be more comfortable and confident in anonymous situations. For those who feel uncomfortable discussing sensitive issues or who have difficulty developing close face-to-face relationships, the anonymous connectivity of computer-mediated communication may be considered as the most important advantage of online support (Wright, 2002). Thus, Wright and Bell (2003) claimed that the anonymous and asynchronous nature of computer-mediated communication of online social support groups have increased members' willingness to disclose private information.

Researchers have suggested that online social support is related to positive health outcomes with its unique features of computer-mediated communication. For example, Finn (1995) suggested that online social support provides supplemental supports in addition to the traditional social support, especially for those who require a great deal of support. That is, the unique advantages of online social support often work as useful addition to the traditional social support by improving the physical and mental health of patients, family members, and communities. Researchers from psychological perspectives also suggested that the benefits of online social support are prevalent (Cacioppo, Berntson, Sheridan, & McClintock, 2000; Manago, Taylor, & Greenfield, 2012). Since positive outcomes of social support terminate the

negative consequences of social isolation, support recipients often have more adaptive coping responses to stress and generally improve their understandings about the disease. Therefore, researchers have showed that receiving social support positively influences patterns of health behaviors, beliefs and attitudes about life, self-esteem and hope for the future, and the sense of life purpose (Oh, Ozkaya, & LaRose, 2014).

Although online social support researchers have focused on the technical features of online social support and advantages of computer-mediated communication (Lea & Spears, 1992; Robinson & Turner, 2003; Walther, 1996), several studies also have pointed out that the goal of an online social support remains the same as the traditional social support (Manago, Taylor, & Greenfield, 2012; Walther & Boyd, 2002). Therefore, considering the existence of different perspectives in diverse disciplines that investigate social support in online settings, this section presents the major discussions about the nature of social support. To begin with, traditional conceptualization of social support in sociological, psychological, and communicational traditions will be reviewed. Then, to understand how support receivers obtain benefits from social support, the complex types of social support and optimal matching perspective will be explained. Because online support group users interact with others to obtain required information and receive different type of supports they desire, this section provides a broad understanding about how information seekers' efforts possibly induce the optimal matching between the desired and received support.

Background of Social Support Studies

When people experience a serious illness or disabling condition, the effects can influence numerous areas of their life, such as mobility, self-care, employment, communication, and social relationships (Braithwaite, Waldron, & Finn, 1999). With all these difficulties, the person may

need additional help and support in the short term. If the health problems persist or become permanent, the person may need diverse kinds of social support on a long-term basis. In these situations of handling stressful events, people often need social support as a social therapy to help them cope with the incongruities of their situation (Moss, 1973).

According to Albrecht and Goldsmith (2003), Cobb‘s definition of social support was the first well-developed conceptualization of such behavior that emphasizes communication processes. Cobb (1976) termed social support as one of three classes of information that “led the subject to believe that he/she a) is cared for and loved; b) is esteemed and valued; and c) belongs to a network of communication and mutual obligation” (Cobb, 1976, p. 300). Since Cobb (1976) first conceptualized social support in this way, researchers across the social sciences began to examine the influence of social support, and research on supportive communication has grown considerably.

According to Thoits (1995), social support should be considered as a coping resource from which people may draw assistance when handling stressors. Albrecht, Burleson, and Sarason (1992) also highlighted social support as “the cornerstone for the quality of human life” (p. 149). Traditionally, social support refers to the functions performed for individuals by significant others, such as family members, friends, and coworkers, in terms of instrumental, informational, and emotional assistance. Researchers (Albrecht et al., 1992; Thoits, 1995) have confirmed these diverse types and sources of social support that significantly benefit support recipients. Additionally, diverse fields, such as epidemiology, public health, and medicine also have also long recognized the importance of social support as a necessary condition for quality of life and healthful living.

Although there are multiple traditions of research within the concept of social support,

there are three major perspectives that dominate social support studies. First, influenced by epidemiology and sociology, studies conceptualize and assess social support as participating in a social network (e.g., network memberships). Second, influenced by psychology, studies define and measure social support as the perceived availability of helpful persons or behaviors (e.g., perceived support). Third, reflecting both of these perspectives, Burleson and MacGeorge (2002) highlight the functions of communication in social support studies.

Sociological perspective – Social networks and network memberships. Studies from a sociological perspective focus on network memberships, such as how people participate in different social relationships, how frequently people engage in various social activities, and how people belong to a specific community (Brissette, Cohen, & Seeman, 2000). That is, researchers from sociological perspectives consider social support as integration of individuals within social roles and social networks.

Burleson and MacGeorge (2002) mentioned that social support studies from a sociological perspective often operationalize supportive relationships with individual's role differentiation, social participation, and feeling of social connection. For example, Berkman and Syme (1979) measured social support as a construct of diverse social roles and memberships, such as whether a person is married, has contacts with extended family members and close friends, attends church, and is involved in other social groups. Moreover, Stroebe and Stroebe (1996) operationalized social support as the extent to which individuals belong to different groups and the actual use they make of these group memberships.

Psychological perspective – Perceived availability of support. Instead of conceptualizing social support as integration within social network memberships, researchers from psychological perspectives explain social support as an individual's generalized perception of the availability of

social support. Instead of investigating how much supportive behaviors actually have been received from social network members, Cohen and Wills (1985) focused on support recipient's perceptions, cognitions, and appraisals. That is, psychological perspective researchers emphasize the cognitive and emotional process of individuals, and argue the central element of social support is a person's belief that support is available when it is needed or desired.

Although researchers from psychological perspectives define social support as the perceived availability of support that is available when a person needs it, the focus on perceived availability initially originated from actual support, which is enacted support and received support. Lakey and Cohen (2000) noted enacted support as resources provided by support providers to cope more effectively with the stressful issue, thereby reducing stress and protecting support recipient's health. For example, Barrera (1981) suggested that people who experienced a stressful event and actually received assistance from their social networks were more likely to be healthy than people who could not receive support. However, mainly because of the limitations in observing supportive behaviors, only a few researchers have studied enacted support.

Researchers started to study received support by assessing self-report measures (Wills & Shinar, 2000). Received support refers to perceptions of how much supportive behavior has been received from social network members in the recent past. However, some researchers have suggested that received support is not as beneficial as the perceived availability of support. Sarason, Sarason and Shearin (1986) argued that merely letting people know that support is available was related to better health outcomes. Their finding indicated that people perceived more help from the availability of support although support was not actually made available. Moreover, Lehman, Ellard, and Wortman (1986) pointed out that received support does not represent the supportive behavior since some support might be perceived as unhelpful. Finally,

considering that those who report greater level of received support are actually under more severe stress (Barrera, 1986), researchers began to use the perceived availability of support as the critical element of social support.

Thus, recent research from the psychological perspective has tried to understand how perceived support availability influences positive support outcomes. Uchino (2009) also mentioned that people experience less stress from negatively appraised events when they perceive support is available, regardless of whether they actually receive support or not. Researchers view the perceived availability of support as buffering the individual against stress and its health-damaging effects, as well as enhancing the individual's coping (Lakey & Cohen, 2000).

Communication perspective. Although diverse disciplines have investigated social support, according to Albrecht and Goldsmith (2003), social support is a communication behavior that includes interactions of informing, persuading, or teaching in ordinary relationships in social life. They suggested that formal and informal social support among intimates, friends, family members, acquaintances, strangers, and others positively influences health status, such as mental and physical well-being. Considering the above as two different perspectives, studies in communication reflect both perspectives. Goldsmith (2004) highlighted that supportive information is conveyed ultimately through messages created and sustained by one person to another in the context of a relational interactions in social networks.

Additionally, Burleson and MacGeorge (2002) highlighted the role of communication in social support as follows. First, communication is central to social integration, thus, social networks are maintained through communication among network members in the sociological perspective. Second, perceived availability of support is created by communication although this

communication behavior is often invisible. As such, they suggested that the functions of communication should occupy the central place in social support studies. Other communication scholars (Robinson & Turner, 2003) as well have considered social support as the dynamic interpersonal interactions among social networks, where within the process of interactions, support recipients who perceive the availability of social support, generally have better health and well-being.

Diverse Types of Social Support and Optimal Matching Perspective

There are diverse types of social support ranging from sharing thoughts (Hildingh, Fridlund, & Segesten, 1995) to promoting healthy habits (Callaghan & Morrissey, 1993). According to Cutrona and Russell (1990), social support is most beneficial when the social support desired by a support recipient is consistent with the social support offered by the support provider. That is, the successful social support occurs when the supportive interaction desired by support recipient is same to the social support offered by support provider. Since the consistency between the type of social support desired and provided has been considered as critical in social support, researchers attempted to distinguish social support into different types by the content or focus of messages.

Cutrona and Russell (1990) identified six common types of social support to indicate social support is a multi-dimensional construct. They categorized six types of social support as follows.

First, emotional support occurs when an individual goes to others during a time of difficulty and the interaction influences feelings of comfort or a sense of being cared by others. Being empathetic or comforting someone is an example of trying to provide emotional support to another individual.

Second, social integration support occurs when a person is included by other members of a group in social networks. Those group members often have some common interests or concerns, and typically the relationships are described as casual friendships. Inviting someone to a dinner or going to a movie together is an example of social integration support to another individual.

Third, esteem support occurs when a support provider provides a feedback indicating a support recipient is competent. Such a feedback provides a support recipient the feelings of efficacy and increases the feelings of self-worth. For example, by telling a support recipient is doing a great job at adjusting a difficult situation, a support recipient found esteem supports from other people.

Fourth, tangible support occurs when someone provides concrete instrumental assistance such as financial aid or a physical support. Similar to Helgeson and Cohen (1996)'s instrumental support, in a stressful situation, a support recipient often cannot solve the problem without the assistances of other people.

Fifth, informational support occurs when a support provider provides information, advice, or guidance concerning possible solutions to a problem. For example, by sharing an experience among patients, people can be acknowledged that a certain medication should be taken at night to prevent a headache.

Sixth, support of others occurs when a person provides support to others. It is based on the belief that people have a desire to be needed by others. Thus, the act of providing social support to others actually influence support providers to feel better about themselves and their abilities.

Considering the diverse types of social support messages, subsequent researchers

(Helgeson & Cohen, 1996; Thoits, 1995) also categorized the types of social support as follows:

First, emotional support includes direct and indirect, verbal and nonverbal expressions of concern and caring. Helgeson and Cohen (1996) mentioned that emotionally supportive behaviors include listening, being present, reassuring, and comforting. They suggested that emotional support also enhance self-esteem and reduce isolation for those who experience a stressor.

Second, informational support involves providing advice, guidance, or the knowledge of resources. Informational support can enhance a person's sense of control by providing diverse options for possible actions. Helgeson and Cohen (1996) mentioned that informational supports provide clarification, reduce confusion, and improve coping.

Third, instrumental support involves the provision of tangible or material support, such as food, transportation, money, or assistance with tasks. Instrumental support also enhances a support recipient's sense of control by providing resources to manage the stressed issue. However, Helgeson and Cohen (1996) pointed out that instrumental support potentially contribute to a sense of dependence to others.

Attempting to categorize the different types of social support, researchers have found that support satisfaction is required in the process of effective social support. That is, support types offered by a support provider should match the support recipient's need, and discrepancies between the types of social support that are desired and received might negatively affect the result of social support (optimal matching perspective; Xu & Burleson, 2001). For example, receiving emotional support will not be considered as a benefit to support recipients who are in need of informational support. Therefore, considering the situation where people start searching for health information from search engines and obtain relevant user-created information from

online support groups that matches with their needs (Bader & Theofanos, 2003; Berland, Elliot, Morales, et al., 2001; Eysenbach & Köhler, 2002; Fox & Duggan, 2013; Fox & Raine, 2002; Hansen, Derry, Resnick, & Richardson, 2003; Peterson, Aslani, & Williams, 2003; Rideout, 2001; Skinner, Biscope, Poland, & Goldberg, 2003), this dissertation focuses on information users' information management strategy with others' experiences and narratives in online settings. Since users of online support groups can narrow a search and obtain required information tailored to their specific informational needs, information management strategies in online support groups represent the optimal matching perspective.

Although the majority of social support research has emphasized the significance of social and relational interactions among online support group members, this research has overlooked the potential utility of user-created messages shared in online support groups. Since the cognitive mechanism of how information users search for informational support from other online support group members has been explained in a limited manner, the current dissertation will contribute to a more in-depth understanding of the nature of social support. Applying the theory of motivated information management (TMIM) as the main framework in the current study, the next subsection will summarize the previous literature about the TMIM.

Theory of Motivated Information Management

When people make decisions about health-related issues, whether it is a specific medical issue or a mundane health event, they search for information to deal with the complexities associated with the uncertainty about the issue or event (Morahan-Martin, 2004). Babrow, Hines, and Kasch (2000) argued that the complexity of an illness, such as the cause, the contingent nature of symptoms, and presence of reciprocal causal processes, makes people perceive uncertainty in health-related contexts. To deal with the uncertainty, researchers have suggested

that information seeking is a key coping strategy since information contributes to knowledge and beliefs, and helps evaluation and modification of health behaviors (Brashers, Goldsmith, & Hsieh, 2002; Goldsmith, 2004; Johnson & Meischke, 1993; Johnson & Meischke, 2006; Mishel, 1988; Mishel & Clayton, 2003). In particular, the Internet recently has become an important resource for individuals to acquire health information. For example, people use the Internet to gather specific medical information (Diaz, Griffith, Ng, Reinert, Friedmann, & Moulton, 2002; Broom, 2005) or routine information (Nettleton, Burrows, O'Malley, & Watt, 2004). Moreover, people use the Internet in preparation for a doctor's visit (Diaz et al., 2002) and to increase their sense control over their disease after the visit (Broom, 2005).

Although extensive research has documented the nature of online social support groups, relatively little work has focused on how people manage the user-created messages shared in online support groups. Babrow and Matthias (2009) emphasized the importance of information management strategies to deal with overwhelming information in that excessive information requires not more information but strategies for dealing with information overload. While online support group members continuously share their experiences that may induce information overload for information users, Liu and Gonzalez (2007) highlighted that "individuals who are presented with a great amount of information may lose details of information they receive, leading to systematic distortions in the information they recall and leaving them only a general positive or negative affective impression" (p. 206). Thus, in the situation where people are exposed to a large amount of information created by others to manage the uncertainty, the current study reviews prior literature about how people strategically seek, avoid, or filter information from others. In particular, this chapter will focus on the theory of motivated information management as a framework for understanding how people make decisions to

engage in seeking or avoiding information about specific cases of other group members.

In regards to individuals who actively seek health information about specific issues, a number of theories have been proposed. For example, comprehensive model of health information seeking (CMIS; Johnson & Meischke, 1993), health information acquisition model (Freimuth, Stein, & Kean, 1989), uncertainty management theory (UMT; Brashers, 2001), and theory of motivated information management (TMIM; Afifi & Weiner, 2004) have accounted for the systematic analysis of key factors that influence individuals' information management process, such as uncertainty, experience with an illness and expectations about the information seeking outcomes (Rains, 2008). Although influenced by a wide range of previous theoretical frameworks that explores the cognitive mechanism how people make a decision to manage information about a specific issue, there are three noteworthy positions that TMIM distinguishes itself from the previous theoretical approaches (Afifi & Weiner, 2004):

First, the TMIM highlights interpersonal encounters as an information management process that is conducted between information seekers and providers. The TMIM framework involves an interpersonal dyad that involves "at least two communicators; intentionally orienting toward each other; as both subject and object; whose actions embody each other's perspectives both toward self and toward other" (Afifi & Weiner, 2004, p.170). Although people are able to access various sources of information, the TMIM is limited to interpersonal exchanges in that communication with one another directly influences an individual's choice of information management strategy. That is, when both information seeker and provider make evaluations about communication efficacy, coping efficacy, and target efficacy of each other, even subtle cues about the other may affect the whole information management process. Second, unlike other theories arguing that uncertainty is the motivational force to seek information, the TMIM

proposes that individuals may purposefully seek increased uncertainty and accept even higher level of uncertainty (Afifi & Weiner, 2004). For example, researchers have shown that people with no known cure or adequate treatment want to remain ignorant about their illness states (Case, Andrews, Johnson, & Allard, 2005) or tend to protect long-held beliefs from challenges of information seeking (Johnson, Case, Andrews, & Allard, 2005). Thus, the TMIM highlights that uncertainty discrepancy, which indicates a gap between desired and actual uncertainty, is related to individuals' information seeking. Third, the TMIM includes a set of efficacy assessments to explain the process of information seeking. Since individuals' perception of efficacy has been highlighted in social psychology and communication (Bandura, 1997), the TMIM extends the conceptualization of efficacy in the process of information management in interpersonal settings. In particular, three types of efficacy, coping, communication, and target, are included in the theory.

Defining the concept of information as stimuli from an individual's environment that contribute to one's knowledge or belief (Brashers, Goldsmith, & Hsieh, 2002), the TMIM accounts for how information users' interpretation of uncertainty about a specific issue produces emotional responses and how their evaluation of outcome expectancy and efficacy are associated with a decision to seek or avoid information about the issue. That is, assuming that people actively manage their uncertainty in important situations, the TMIM asserts that uncertainty causes anxiety, and people evaluate the benefits and costs associated with information seeking when such anxiety arises (Afifi & Weiner, 2004). At the same time, perception of coping efficacy (the extent to which individuals believe they have the resources to manage the process), communication efficacy (the extent to which individuals have skills to complete the communication tasks), and target efficacy (the extent to which an information target is able and

willing to provide complete information) also determine information users' information management. The TMIM proposes that the process of information-management has three phases: interpretation, evaluation, and decision.

Interpretation Phase

The first phase of information management process starts with awareness about an uncertainty discrepancy on an important issue. That is, the interpretation phase involves assessments of the discrepancy between the amount of uncertainty already present and the amount of uncertainty desired. Brashers (2001) noted that uncertainty arises, "when details of situation are ambiguous, complex, unpredictable, or probabilistic; when information is unavailable or inconsistent; and when people feel insecure in their own state of knowledge or the state of knowledge in general" (p. 478). Whereas previous uncertainty reduction frameworks (e.g., uncertainty reduction theory) highlight the uncertainty itself as a main factor that influences anxiety and motivates efforts to reduce it (Berger & Calabrese, 1975), Afifi and Weiner (2004) argued that people sometimes are satisfied with the high level of uncertainty and purposely choose to remain in the uncertainty. Moreover, elevated uncertainty sometimes produces hope and optimism (Brashers, Goldsmith, Hsieh, 2002), particularly with specific personal characteristics (Miller, Fang, Diefenbach, & Bales, 2001). Thus, the TMIM emphasizes that people's awareness of the uncertainty discrepancy between the desired amount of uncertainty about a specific issue and the actual amount of uncertainty about that issue plays a main role to determine anxiety. Explaining the gap between the amount of uncertainty an individual is aware of for an important issue and the amount of uncertainty desired for that issue, Afifi and Weiner (2004) posit that greater uncertainty discrepancy is related to higher anxiety and people are motivated to manage the anxiety. Afifi and Weiner (2004; p. 175) proposed two propositions as

follows:

> Proposition 1: The size of the mismatch between actual and desired levels of uncertainty (i.e., uncertainty discrepancy) about an important matter leads, in a linear fashion, to un- certainty-related anxiety (hereafter labeled anxiety).
>
> Proposition 2: Anxiety partially mediates the association between uncertainty discrepancy and the information-management process.

Later, Afifi and Morse (2009) articulated a revised TMIM model, which replaced the uncertainty-related anxiety with a wider range of emotional responses. Considering that uncertainty discrepancy may induce diverse types of emotional responses than anxiety alone, Fowler and Afifi (2011) pointed out that the emotional responses could be considered to impact the next phase of the information management process.

Evaluation Phase

The second phase of the information management process is evaluation, where people assess the benefits and costs of a particular information management strategy as well as three types of efficacy. Mediating the effect of anxiety on the information management decision, the evaluation phase includes two cognitive assessments: outcome assessments (assessing the benefits and costs of an information search) and efficacy assessments (assessing the ability to reduce the anxiety by gaining the sought-after information) (Afifi & Weiner, 2006).

First, Afifi and Weiner (2004) explained that people assess the benefits and costs of a particular information seeking strategy, and positive assessments encourage people to seek for information. In particular, they argued that outcome assessments consist of three expectancy-related components, outcome expectancy (expectations about the possible outcomes), outcome

importance (value or utility of the possible outcome), and outcome probability (the likelihood that the outcome will actually occur). Afifi and Weiner (2004; p. 176-177) conceptualized outcome expectancy as "an individuals' assessments of the benefits and costs of a particular information-seeking strategy"; outcome importance as "the importance of the expected benefits and costs associated with the particular information-management strategy in question"; and outcome probability as "the perceived likelihood that an action will result in the expected outcomes". Later, Afifi (2010) also explained that outcome assessments include both process and results-based expectancies: the expected outcome associated with the action of information seeking (Chatman, 2000) and the expected outcome associated with the content of gained information (Morrison, 2006). Based on the outcome assessment literature, Afifi and Weiner (2004; p. 178) proposed a proposition as follows.

> Proposition 3: The likelihood of seeking information is a function of the weighted combination of the three outcome assessment components (outcome assessment, importance, and probability).

Second, Afifi and Weiner (2004) brought Bandura's (1997) definition of efficacy into the TMIM process. Bandura (2007) defined efficacy beliefs as "individuals' perceptions of their ability or the ability of a target object or person to successfully perform a behavior or produce an outcome." In the information-management context, people evaluate "a behavior" as searching for information from a particular source and assess "outcome" as reducing anxiety. In particular, Afifi and Weiner (2004) argued that people make three distinct efficacy assessments: coping, communication, and target efficacy. Coping efficacy is defined as "the extent to which individuals believe that they have the emotional, instrumental, and other resources to manage the process- and results-based outcomes they expect from the information-management strategy

under consideration" (Afifi & Weiner, 2004; p. 178). Communication efficacy refers to "individuals' perception that they possess the skills to complete successfully the communication tasks involved in the information management process" (Afifi & Weiner, 2004; p. 178). Target efficacy represents "the belief that the information target is able and willing to provide complete information" (Afifi & Weiner, 2004; p. 179). Considering that target efficacy includes both target's ability and target's honesty, researchers (Afifi & Weiner, 2006; Afifi, 2009; Fowler & Afifi, 2011) pointed out that both components of target efficacy possibly show whether a person has sufficient information about the issue, is willing to provide complete information, and is completely honest in discussing the issue. Based on the efficacy literature, Afifi and Weiner (2004; p. 179) proposed a proposition as follows:

> Proposition 4: The likelihood of seeking information is a function of the weighted combination of the three efficacy assessments (coping, communication, and target efficacy).

Third, in addition to the role of outcome assessments and efficacy in the evaluation phase of the TMIM process, Afifi and Weiner (2004) also highlighted the relationship between outcome assessments and efficacy. Specifically, three efficacy assessments mediate the role of outcome assessments on individual's information management strategy. Afifi and Weiner (2006) pointed out the conceptual distinction between outcome assessments and efficacy as follows: "outcome expectancy is an assessment of rewards and costs that will likely result from an action while efficacy judgments reflect whether something or someone can engage in that action" (p. 193). Therefore, the TMIM argues that outcome assessments associated with an information-management action precede the perception of efficacy and help individuals to assess whether they can cope with those outcomes, engage in the communicative action, and gather those

outcomes from the target person. Based on the previous discussion, Afifi and Weiner (2004; p. 180) proposed three propositions as follows:

> Proposition 5: Efficacy assessments are, in part, a function of the outcome assessments.
>
> Proposition 6: Efficacy assessments partially mediate the effect of outcome assessments on the selection of an information-management strategy.
>
> Proposition 7: The strength of efficacy's mediating effect in the outcome assessment strategy selection association is a function of the valence of expected outcomes.

Decision Phase

The decision phase provides a wide range of information management options to information seekers. For example, people seek out relevant information directly (asking questions up front), indirectly (by observation of the target, talking around an issue, disclosing with hope that the other person will reciprocate). People also make either active or passive efforts to avoid the information when efficacy is threatened, or make no effort to seek information but make psychological adjustments to change the cognitive mechanism that activated the original need for information. Thus, Afifi and Weiner (2004) posit that there are multiple information management options, such as seeking relevant information from the target, avoiding relevant information from the target, and engaging in cognitive reappraisal in that individuals reassess the level of actual or desired uncertainty of the issue. In general, previous research about TMIM has shown that positive outcome assessments and increased efficacy are related to information seeking whereas negative outcome assessments and decreased efficacy are related to information avoiding. In addition, TMIM researchers have shown that people

cognitively reassess the need for information by reframing their uncertainty (Babrow, 1992) or uncertainty-related anxiety (Afifi & Weiner, 2004). That is, instead of reducing the uncertainty or uncertainty-related anxiety through information, people change their thinking by reevaluating the importance of an issue or the desired level of uncertainty (Afifi & Weiner, 2004). Thus, cognitive reappraisal removes uncertainty or anxiety, and in turn this psychological adjustment aborts the information management process.

Afifi and Weiner (2006) brought up concerns about the empirical significance of the TMIM within diverse contexts. However, TMIM researchers have shown that the overall model fit of TMIM is good and the individual paths of each construct are supported across diverse contexts (e.g., sexual health (Afifi & Weiner, 2006); organ donation (Afifi, Morgan, Stephenson, Morse, Harrison, Reichert, & Long, 2006); bullying (Matsunaga, 2009); parents' marital relationship (Afifi & Afifi, 2009); caregiving with aging parents (Fowler & Afifi, 2011); family health (Hovick, 2013); and interpersonal information (Tokunaga & Gustafson, 2014). Considering that the TMIM has successfully predicted individual's information management strategies in interpersonal contexts (Afifi & Weiner, 2006), the current study will use the TMIM as a main theoretical framework to examine college students' information management strategies about their sexual health.

Since information was defined in TMIM as stimuli from an individual's environment that contribute to one's knowledge or belief, this dissertation extends the current TMIM framework by applying social comparison information. Social comparison is a central feature of human social life and is a fundamental psychological mechanism influencing people's judgments, experiences, and behaviors (Corcoran, Crusius, & Mussweiler, 2011). In particular, when confronted with a health issue, people often use other people as one of the most important

sources of information (Suls, 2011). According to Wood, Taylor, and Lichtman (1985), people with an illness often select comparison targets who are similar to themselves because they perceive these comparisons as providing valuable information. Online support group users use other people as one of the most important sources of information, so the following subsection reviews the previous literature about social comparison to highlight its important role in the TMIM process.

Social Comparison

Considering that online support groups provide an environment for people to share health-related information and interact socially with other members, online support group users are enabled to compare themselves with other members by searching for the stories and narratives shared by others. Researchers have shown that online support group members actively seek out personal stories of other group members, case by case, which include information about the experience of symptoms, diagnosis, disease progression, medication and treatment, side effects of treatment, daily experiences of living with the infections, and the long-term consequences of treatment (Overberg, Alpay, Verhoef, & Zwetsloot-Schonk, 2007; Wise, Han, Shaw, McTavish, & Gustafson, 2008). While online support groups work as important repositories of case-specific health information, the huge volume of messages shared by online support group members allows information users to compare their own situation with others' experiences (Shaw, McTavish, Hawkins, Gustafson, & Pingree, 2000). For example, breast cancer patients search for relevant stories of other people to cope with their illness (Overberg et al., 2007). By using specific keywords including personal data, such as age, treatment undergone, time since diagnosis, and presence of metastases, recent breast cancer patients were able to conduct appropriate searches to obtain relevant health information shared by others and

retrieve those stories that inform them about their disease states in the future.

The social comparison mechanism and the consequences of social comparison are known to be complex as to how people position themselves vis-a-vis the comparison targets and then interpret the comparison (Mussweiler, 2003). People conduct two types of social comparisons, upward (comparing themselves with others who are doing better/in the better situation) and downward (comparing themselves with others who are doing worse/in the worse situation) comparisons. In addition, these social comparisons may be interpreted differently depending on whether people judge themselves in the same or opposite direction of the comparison targets (Trampe, Stapel, and Siero, 2007). For example, when exposed to upward comparison messages, some people might identify themselves with a better off target and obtain comfort by receiving hope and useful information for effective coping. On the other hand, some people might interpret the same comparison messages negatively by contrasting themselves with a better off target and feel frustrated about their situation. Thus, when people have the same upward comparison target, they can be inspired by discovering that their situation could be better (I can make it through as others did) or depressed by learning that their situation could be worse than the comparative target (other people are extreme cases, so my situation will be getting worse) (Salovey, Rothman, & Rodin, 1998).

Researchers have suggested that social comparison to others influence how people think and feel about themselves, how they experience diverse types of emotions, and how they cope with stressful events (Epstude & Mussweiler, 2009; Taylor & Lobel, 1989). The next subsection reviews how and why people evaluate their own health situation by making comparison with the cases of other people. After the original social comparison theory (Festinger, 1954) is introduced, the rest of this subsection reviews the literature about motivations and consequences of different

types of social comparisons.

Social Comparison Theory

Social comparison, which is relating one's own features to those of others and vice versa, is considered an important characteristic of human social life (Buunk & Mussweiler, 2001). Festinger (1954) suggested that people want to know about themselves and they do so by comparing their own personal traits, fortunes, strength, or weakness with others. This original social comparison theory suggested that people are engaged in social comparison with those who are similar to themselves on the dimension of comparison and this process induces changes to one's opinion or behavior (Festinger, 1954). Since people prefer to evaluate themselves using objective standards, social comparison researchers (Wheeler, 1966; Goethals & Darley, 1977) have explained that similarity on related attributes provides accurate comparison information about themselves. For example, people consider their own and their competitors' ages when they compare their physical performance. However, if a much older competitor outperforms in the physical performance, people do not perceive the gap of critical dimension (physical performance in this case) as accurate comparative information (Buunk & Gibbons, 2000; Corcoram et al., 2011; Suls & Wheeler, 2000).

Through nine hypotheses, Festinger (1954) originally provided insight into the nature of social comparison. The first two hypotheses suggested that people have a strong need to know about themselves and for information about others. Since people already understand that holding incorrect information might negatively influence their own status, they have a need to know about the self by comparing to others. The next three hypotheses explain to whom people compare themselves. The importance of similar others is emphasized since comparison to divergent others provides less useful information to comparers, whereas comparison to similar

others offers an implied consensus and common bond and thus are more validity. Although these hypotheses assumed that people try to find similarity with others on comparison dimensions, subsequent research has pointed out that people sometimes seek others who have slightly better abilities than themselves (Wheeler, 1966). The last four hypotheses looked at the consequences of social comparison. In most cases, social comparisons cause one's opinion or behavior to be assimilated to the same direction of comparison targets. Depending on the importance, relevance, and attraction of the others, these hypotheses predicted assimilation, in that people are likely to change themselves for uniformity with others.

Motivations for Social Comparison

When comparing themselves to targets, people might have different motivations for social comparison and choose different types of comparison targets. Festinger (1954) originally emphasized self-evaluation and declared the desire of people to know about themselves as a motivation for social comparison. According to Festinger (1954), people are likely to assess their own status on diverse dimensions, such as financial position, intellectual capabilities, and physical attractiveness. Thus, people select others who are similar to themselves on these dimensions to evaluate their own status. Since comparison with similar others provides them useful information about themselves, people tend to avoid dissimilar others for comparison. Subsequent researchers have also explained that need for accurate self-evaluation is the main motivation for social comparison. Taylor, Wayment and Carrillo (1996) suggested that social comparison with others provides relatively objective information about themselves. Since people do not have objective standards in evaluating their performances, people strategically use social comparison information as objective standards (Klein, 1997). Researchers have also suggested that people conduct social comparison on diverse attributes, such as abilities (Wheeler, 1966),

emotions (Wrightman, 1960), opinions (Festinger, 1954), personal attributes (e.g., personality, physical appearance, academic performance, academic ability, etc.) (Hackmiller, 1966; Suls, Martin, & Wheeler, 2002; Suls & Wheeler, 2000), and related attributes (Goethals & Darley, 1977).

Along with need for accurate self-evaluation, researchers have also argued that need for self-enhancement or self-improvement operates as a major motivation for social comparisons (Suls, Martin, & Wheeler, 2002). Instead of focusing on accurate self-evaluation, upward comparisons (comparing themselves with others who are doing slightly better/in the better situation) have been known to provide people with information that is essential for future improvement. According to Taylor and Lobel (1989), a need for self-enhancement or self-improvement works as a motivation of social comparisons to understand advanced others and to follow their achievements. For example, upward comparison helps patients to cope with their stressful situation by providing positive role models, inspiration, and hope (Colins, 1996; Taylor & Lobel, 1989).

Moreover, Wills (1981) has noted that people often compare themselves with others who are thought to be worse off to improve their self-image and subjective well-being when one's well-being is threatened and instrumental action is not available. Although social comparison toward superior others might be potentially informative for self-enhancement or self-improvement, people purposefully also prefer downward comparison (comparing themselves with others who are doing worse/in the worse situation/less fortunate). Wills (1981) explained this preference for downward comparison in that people are engaged in social comparison with others who are worse off when they fail and their self-esteem is threatened. Since failures can be perceived as successes in comparisons with others who performed even worse, social

comparison toward superior others is perceived as threatening self-image and is often avoided under threat (Brickman & Bulman, 1977; Wilson & Benner, 1971). On the other hand, downward comparisons can be strategically used to maintain self-image and subjective well-being (Wills, 1981). For example, Taylor, Wood, and Lichtman (1983) showed that breast cancer patients were preponderantly engaged in downward comparison with other cancer victims.

In addition, the efficiency of cognitive processes also works as a motivation for why people engage in social comparison. From a social cognitive perspective, Mussweiler and Epstude (2009) have emphasized that people process social comparison information to achieve efficiency in information processing. Since people are cognitive misers (Taylor, 1981), they have to be efficient to use their scarce cognitive resources when encountering lot of information. While social comparisons possibly limit the range of available information that has to be considered, people might evaluate a given object in a comparative manner. Mussweiler and Rüter (2003) suggested that people lack the extensive capacities to deal with information that includes different dimensions, different standards, and different criteria to be considered. Thus, instead of engaging in the arduous and almost impossible task of finding the most diagnostic standard, people might simply consider standards that they routinely use for comparisons.

Directions of Social Comparisons

As noted earlier, Corcoran, Crusius, and Mussweiler (2011) explained that several factors (need for accurate self-evaluation, need for self-enhancement or self-improvement, need for maintaining positive self-image, and need for efficiency with one's cognitive resources) operate as major motivations of social comparison. Based on these motivations, three different directions of social comparisons have been explored in the literature: lateral, upward, and downward comparison.

People use lateral comparison, that is comparison to similar others, to obtain diagnostic information for themselves on a relevant attribute since they prefer cognitive efficiency and want to avoid an arduous and almost impossible process of selecting the most diagnostic standard for comparison. Assumed by the original social comparison theory (Festinger, 1954), lateral comparisons (comparing themselves with others who are doing similar/in the similar situation/average) provide the most useful information for those who judge their level on a particular attribute (Suls & Wheeler, 2000).

In addition to lateral comparisons, people also make vertical comparisons by focusing on either upward or downward comparisons. The upward comparisons motivate them to improve their status based on ideal standards. Being motivated by self-enhancement and self-improvement, people seek superior others to improve themselves even though upward comparison may lead them to perceive a gap between target's status and their own. For example, cancer patients often make upward comparisons when choosing interaction partners among other cancer patients (Molleman, Pruyn, & van Knippenberg, 1986). Moreover, downward comparisons allow them maintain a positive self-image. By seeking inferior others, people can maintain a more favorable perception of their own status and thus do not want accurate information about themselves. For example, people with minor illnesses are more likely to compare themselves with people with life-threatening illnesses. Since this downward comparison enhances their perceived well-being and positive feelings about their situation, people make downward comparisons (Wood, Taylor, & Lichtman, 1985).

Interpretations and Consequences of Social Comparison

Although Festinger's (1954) original social comparison theory did not highlight the diverse consequences of social comparison, subsequent researchers have shown that social

comparison with others induces diverse types of consequences, such as self-evaluation, self-perception, affective reaction, motivation, and behavior (Corcoran, Crusius, & Mussweiler, 2011). In particular, researchers have argued that the consequences of social comparisons include two emotional states, positive or negative, depending on how people relate information about others to themselves (e.g., identification with the comparison target or contrast to the comparison target) (Buunk & Ybema, 1997; Mussweiler, 2003).

Identification occurs when people perceive themselves as consistent with the comparison target (e.g., people focus on the similarities between themselves and the comparison targets), and thus self-judgments move in the direction of the comparison target (Mussweiler & Strack, 2000). On the other hand, contrast occurs when people perceive themselves as opposite to the comparison target (e.g., people focus on the differences between themselves and the comparison targets), and thus self-judgments move away from the comparison target (Trampe et al., 2007). For example, when upward comparison targets are cognitively accessible, some people follow those superior others as role models. By identifying themselves with the comparison target, they are inspired with hope and admiration, and finally show better coping performance in the future (Seta, 1982). Taylor and Lobel (1989) also suggested that upward comparisons are often related to higher motivation or confidence regarding self-improvement, which finally results in a positive emotional state (e.g., hope, admiration, and willingness). On the other hand, when the same upward comparison targets are cognitively accessible, some people contrast themselves with the comparison target. Since the upward comparison target reduces their own self-image, they feel frustrated and depressed, and finally lose their ambition to cope with the disease (Gilbert, Giesler, & Morris, 1995).

Mussweiler (2003) explained that diverse factors, such as the extremity of the target and

the ambiguity of the knowledge about themselves, influence the interpretation of social comparison. He has shown that people evaluate perceived similarity between the self and the comparison target by obtaining specific judgment-relevant traits about the self and the comparison target. According to the selective accessibility model (SAM; Mussweiler, 2003), social comparison engaged one of two alternative hypothesis-testing cognitive mechanisms: similarity testing and dissimilarity testing. After people initially conduct self-evaluation based on an overall impression of similarity or dissimilarity about the comparison target, they determine the direction of change in self-evaluation in two different ways. When people perceive similarity with the target, they test the hypothesis that the self is similar to the standard. On the other hand, when people perceive dissimilarity with the target, they test the hypothesis that the self is dissimilar to the standard. After either similarity testing or dissimilarity testing is chosen, people selectively focus on hypothesis-consistent evidence. That is, the similarity testing selectively increases the accessibility of standard-consistent self-knowledge, whereas dissimilarity testing selectively increases the accessibility of standard-inconsistent self-knowledge. Since this knowledge reflects the consequences of social comparison, standard-consistent self-knowledge is related to identification whereas standard-inconsistent self-knowledge is associated with contrast.

Other researchers have shown that diverse factors influence the consequences of social comparisons. Stapel and Koomen (2001) pointed out that self-construal level moderates the impact of self-activation on the occurrence and direction of social comparison effects. Depending on cultural and situational context, people may represent themselves as individuals (personal self-construals) or in relationship with others (social self-construals). So, Stapel and Koomen (2001) claimed that downward comparison leads to contrast toward the comparison target and produces the stronger positive self-evaluation when personal self-construals ("I") are

activated. On the other hand, upward comparison leads to identification toward the comparison target and the stronger positive self-evaluation when social self-construals ("we") are activated. Gardner, Gabriel and Hochschild (2002) also confirmed this finding with highly independent (i.e., personal self-construals) and interdependent (i.e., social self-construals) selves.

Blanton and Stapel (2008) suggested that the priming of standard traits (e.g., attractive or intelligent) determines one's identification and contrast toward social comparison targets. In the three selves model, Blanton and Stapel (2008) proposed the three different types of selves that lead to different impacts on social comparisons. They described the "personal-self" as the assessment of one's current traits, the "social-self" as the assessment derived from various group memberships, the "possible-self" as one's possible future by adopting the traits of the comparison standards at some point. Contrast toward comparison target emerges when attention is focused on the personal-self, whereas identification toward comparison target emerges when attention is focused on social- or possible-selves.

A number of researchers have suggested that several moderators might moderate the results of social comparison. The extremity of the standard (Mussweiler, Rüter, & Epstude, 2004), the ambiguity of self-knowledge (Stapel, Koomen, & Van der Pligt, 1997), in-group and out-group membership (Mussweiler & Bodenhausen, 2002), relationship with the standard (cooperative or competitive) (Stapel & Koomen, 2005), and psychological closeness (Lockwood & Kunda, 1997). Based on these research studies, Corcoran, Crusius, and Mussweiler (2011) summarized that identification is more likely if the comparison standard is a moderate standard, if the comparison standard belongs to the same category as the self, or if the self-knowledge is ambiguous concerning the dimension on which the self-evaluation occurs. On the other hand, contrast is more likely if the comparison standard is an extreme standard, if the comparison

standard belongs to an out-group, or if the self-knowledge holds clear implications for upcoming self-evaluation.

As shown above, researchers (Buunk, Collins, Taylor, Van Yperen, & Dakof, 1990; Collins, 1996) have shown how people interpret social comparison information. That is, people may identify themselves with a comparison target (e.g., overestimate similarities and focus on the similarities between themselves and the target) or contrast themselves with the target (e.g., underestimate similarities and focus on the differences between themselves and the target). Although traditional social comparison research has focused on contrast in social comparison, people assume similarity of themselves to the comparison target in that the target's status may influence the comparer's future status. In the context of health issues, identification includes a perception that comparer will share a similar fate with the target (Van der Zee, Buunk, Sanderman, Botke, and van der Bergh, 2000). That is, after looking at the comparison target, people assume that they will become like the comparison target's situation or health status in the future.

Considering the directions and interpretation of social comparison, individuals may follow one of four interpretations of social comparisons: upward identification, upward contrast, downward identification, and downward contrast (Buunk, Kuyper & Van der Zee, 2005). When people identify with a comparison target, upward identification may enhance their self-image and inspire positive feelings such as hope and admiration, whereas downward identification may lower their self-image and make them feel threatened and worried. On the other hand, when people contrast with a comparison target, upward contrast may lower their self-image and evoke negative feelings, such as frustration, depression and a lack of ambition, whereas downward contrast may enhance their self-image and make them feel better and relieved.

Social comparison has been recognized as one of the important social psychological phenomena underlying human social life and has received attention from diverse researchers. In the situation where college students frequently seek sexual health information from the Internet, especially from the information in online support groups, comparative information from other members of online support groups potentially influences information seekers to compare their own situation with others' experiences. Exposed to the comparative messages of online support groups to cope with their illness, the current study investigates how people interpret those social comparisons. Are people inspired by discovering that their situation could be better because they can make it through as others did (i.e., upward identification)? Do they evoke negative feelings, such as frustration and depression because they consider the comparison target as extreme case (i.e., upward contrast)? Do they feel better and relieved with the social comparison because they consider the comparison target as the worst-case scenario that will not happen to them (i.e., downward contrast)? Are they threatened and worried with fear by learning that their situation could be worse like those comparison targets who are worse off than me (i.e., downward identification)? Next, the current research investigates how these social comparison messages affect information seekers' information management process.

CHAPTER 3

Study Rationale, Hypotheses, and Research Questions

Study Rationale

Although STIs affect individuals of every age and education level in the United States, young adults aged 20-24 and adolescents aged 15-19 are known to be among the most highly affected groups (Weinstock, Berman, & Cates, 2004; Wildsmith, Schelar, Peterson, & Manlove, 2010). College students, who typically fall into these age ranges, are especially at a high risk of acquiring STIs due to a combination of biological, behavioral, social, and cultural reasons (Hou, 2009; Patel, Zochowski, Peterman, Dempsey, Ernst, & Dalton, 2012). Moreover, college students face multiple barriers to access high quality preventive services for sexual health (CDC, 2010). Thus, sexual health for college students in the United States has become one of the major public health challenges and STIs are considered as a significant health issue for this group (Kanekar & Sharma, 2010).

Given that college students are sexually active and at a high risk of STIs, it is no wonder that they often search for information about sexual health (Buhi, Daley, Fuhrmann, & Smith, 2009). Among the diverse available sources of sexual health information, such as healthcare providers, partners, family members, peers, and diverse types of media, college students usually obtain this information from the Internet (Rietmeijer, Bull, McFarlane, Patnaik, & Douglas, 2003). Due to the sensitive and embarrassing nature of sexual health issues (e.g., biological and social characteristics of STIs), college students are reluctant to address STIs-related issues in an open way; instead, they prefer to obtain sexual health information from the Internet in an anonymous manner. As a result, 76.5% of college students have sought information about the topic of sexual health online (Buhi, Daley, Fuhrmann, & Smith, 2009).

This dissertation study focuses on sexual health information, and specifically social comparison information using personal stories shared by others in online support groups, for four reasons. First, information about a health topic shared in online support groups provides users a practical knowledge archive on the topic. Considering that messages in online support groups provide cumulative and collaborative information produced by a large number of others (i.e., social capital; Coleman, 1988), these online sources represent an unlimited resource of health information that is not available through face-to-face relationships or the use of traditional media (Katz & Rice, 2002; Magdol & Besser, 2003; Johnsen, 2003).

Second, compared to general health websites (e.g., WebMD, Mayo Clinic, MedHelp, Cleveland Clinic, and EDiets), the interactive features of online support groups promote more satisfactory communicational achievements for the users as these groups allow users to discuss specific topics of their interests informally with others in similar situations (Demiris, 2006; Tanis, Das, & Fortgens-Sillman, 2009). Online support groups provide a place to talk openly with anonymous others in similar situations allowing users to share their own illness experiences and obtain disease-related knowledge from situationally similar others (Rice, 2003; Till, 2003; Winzelbert, Classen, & Alpers, 2003).

Third, online support group users are able to obtain the information they exactly need as these online sites enable an effective and efficient search of their archives. Compared to general information seekers who start at a search engine when they face a health-related issue (Horrigan & Rainie, 2002), users of online support groups, typically with higher health information literacy, are able to narrow a search and purposefully seek related knowledge from illness experiences of other people from the support group archives (Nambisan, 2011). Online support group users search and extract the necessary information to manage uncertainty and cope with

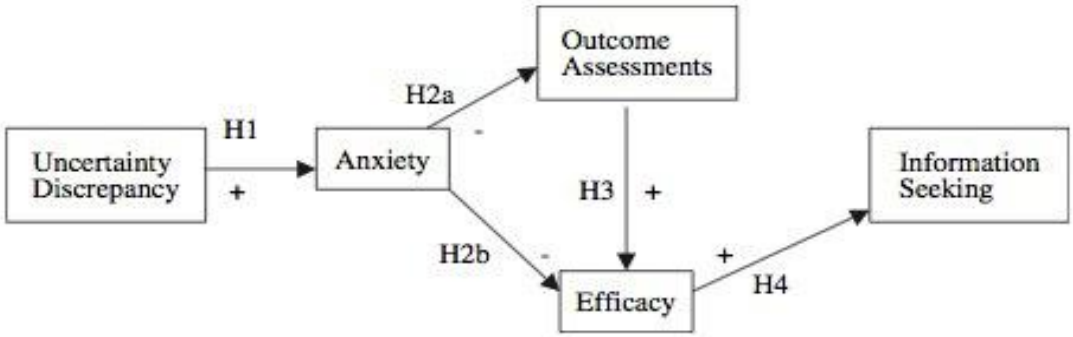
anxiety about their health-related issue (Rice, 2003; Till, 2003; Winzelbert, Classen, & Alpers, 2003).

Fourth, personal information shared by others in online support groups allows users to compare themselves with other people who are in a similar situation. Since online support groups allow members to participate in diverse types of information exchanges (e.g., seeking information, sharing personal experiences, encouragement, and support; Demiris, 2006) for a specific health condition, people with a health issue are able to select comparison targets to obtain comparative disease-related information. Thus, the exchange of personal experiences in online support groups helps users gauge the appropriateness of their feelings and situation (Bunde, Suls, Martin, & Barnett, 2006; Suls, 2011; Wood et al., 1985), obtain disease-related information for self-management (Campbell, Phaneuf, & Deane, 2004; Frost & Massagli, 2008; Kulik & Mahler, 2000), and receive emotional support (Campbell et al., 2004; Zrebiec & Jacobson, 2001).

This study uses the theory of motivated information management (TMIM; Afifi & Weiner, 2004; Fowler & Afifi, 2011) as the main theoretical framework to explain how college students communicatively manage uncertainty and anxiety about their sexual health when they are exposed to personal information of others in online support groups and compare themselves to such information. The process model for the original TMIM is shown in Figure 1. Similar to other uncertainty management theories (Brashers, 2001; Freimuth et al., 1989; Johnson & Meischke, 1993), the TMIM assumes individuals as active information seekers and explains how uncertainty about an important issue produces uncertainty-related emotional responses, and then how evaluation of outcome expectancy and efficacy are associated with information management. Given that the TMIM has addressed the cognitive process of information

management when confronted with an important health issue, this study undertakes a theory-based examination of college students' active information seeking about sexual health information shared by others in online support groups.

Figure 1. Original TMIM Framework (Afifi & Weiner, 2004)



In particular, the current study highlights the role of social comparison messages in the information management process. Researchers have found that people tend to relate their own situation to the situations of others, or vice versa, when they are confronted with serious health issues (Suls, Marco, & Tobin, 1991; Taylor, Buunk, & Aspinwall, 1990; Wood, Taylor & Lichtman, 1985). Despite the important role of social comparison for those who confront uncertainty in health issues, previous TMIM researchers have not investigated how social comparison messages may influence the information management process. That is, although health information users often perceive social comparison messages as valuable information to help them manage their health issues (Wood, Taylor & Lichtman, 1985), there have been no studies about the role of social comparison in the TMIM process. Therefore, the current study aims to investigate the consequences of social comparisons in college students' sexual health information management, particularly the direction of social comparison (i.e., if people tend to compare themselves with superior others who are better off or inferior others who are worse off) and the interpretation of social comparison (i.e., if people tend to identify themselves with comparison targets or contrast with them). Moreover, considering that information management behavior is a cyclical process over the long term, the current dissertation explores how these interpretations of social comparison are related to a subsequent information management process.

When college students encounter others' personal information in online support groups, how do they manage their uncertainty and anxiety about sexual health by using user-created messages shared in online support groups? Do they prefer a specific type of social comparison messages (e.g., upward or downward comparison messages)? How do different types of social comparison interpretations (e.g., upward contrast, upward identification, downward contrast, downward

identification) influence the uncertainty, anxiety about their sexual health, and the whole information management strategies in the TMIM framework? To answer these questions, the current study proposes the following hypotheses and research questions based on the current TMIM framework in the context of college students' information management about their sexual health.

Hypotheses and Research Questions

The TMIM provides a framework for investigating college students' information management strategies for user-created messages shared in online support groups. Guided by the current TMIM model (see Figure 1), we can see that college students who deal with the complexities associated with STIs and their sexual health confront uncertainty in their sexual health, and their uncertainty leads to anxiety. Subsequently, by evaluating outcome expectancy and efficacy of information seeking, college students strategically use personal information of others in online support groups to manage the uncertainty and anxiety in their sexual health. Therefore, based on the central propositions of the TMIM model, the present study proposes the following hypotheses:

H1: Considering the previous TMIM literature about the link between uncertainty discrepancy and anxiety, uncertainty discrepancy is positively associated with anxiety.

H2: Considering the previous TMIM literature about the link between anxiety and outcome expectancy, anxiety is a) negatively associated with outcome expectancy and b) negatively associated with efficacy.

H3: Considering the previous TMIM literature about the mediating role of efficacy, the influence of outcome expectancy on the information seeking is mediated by efficacy.

H4: Considering the previous TMIM literature about the link between efficacy and

information seeking, efficacy is positively associated with the information seeking.

Although the previous TMIM literature suggests that the model is effective at predicting information seeking, it does not explain how people deal with case-specific personal information of others in the information management process. First, since TMIM research has only focused on individuals' cognitive processing to communicate and cope with an important issue within interpersonal encounters (e.g. family members, relational partners, close relationships), an addition of the role of personal information shared by others in online support groups will provide an important improvement in our understanding of the TMIM mechanism. Second, considering that people commonly select comparison targets who are in similar situations to obtain diagnostic health information, testing the role of social comparison in the TMIM model will contribute to refinement of the TMIM's overall theoretical framework. Therefore, the current dissertation extends the original TMIM framework by considering the consequences of social comparisons in the information management process, particularly the direction and the interpretation of social comparisons. The extended TMIM model is presented in Figure 2. Since people commonly consume social comparison information to relate their own situation to the situations of others when they are confronted with serious health issues, this study aims to extend the TMIM model to the direct information seeking of social comparison messages in online support groups. Thus, the current study proposes the following research question:

RQ1: In the context of sexual health and the user-created messages shared in online support groups, a) does the overall TMIM model provide a good empirical fit with the data? and b) are the individual paths in the TMIM framework supported?

Regarding the choice of upward or downward social comparison targets, previous researchers have highlighted the importance of downward comparisons for those who are in a

threatening situation (Gibbons, Gerrard, Lando, & McGovern, 1991). For example, adult smokers preferred to have others with worse smoking problems in support groups so that they could make downward comparisons (Gibbons et al., 1991). Similarly, when asked to compare themselves to other individuals with the same illness, arthritis patients showed more preference to read about another patient who had worse arthritis symptoms than they had (DeVellis, Blalock, Holt, Renner, Blanchard, & Klotz, 1991). Spencer, Fein and Lomore (2001) similarly showed that people who are experiencing a threat choose to relate themselves to a downward target when confronted with the option to choose either upward or downward comparisons. When asked about both upward and downward comparisons, cardiac patients also have mentioned more downward comparison targets in their daily diaries (Bogart & Helgeson, 2000). In addition, several studies about stigmatized or victimized people have showed that downward comparisons are prevalent among people who confront a health threat (Buunk & Ybema, 1995; Gibbons, 1985; Tennen, McKee, & Affleck, 2000; Van der Zee, Buunk, DeRuiter et al., 1996). Therefore, based on the previous social comparison literature, the current study proposes the following hypothesis:

H5: Considering that people who are under threatening health issues prefer downward comparisons, increased uncertainty and anxiety are more likely to be related to the choice of downward comparison messages than upward comparison messages.

Considering that the consequences of social comparison depend on how information users interpret social comparison messages, the current study also investigates how information users' interpretation of social comparison is related to uncertainty and anxiety about health issues. When people try to deal with uncertainty and anxiety about health problems by seeking user-created messages shared in online support groups, their interpretation of these social

comparison messages sometimes reduces or increases their uncertainty and anxiety, depending on the way they interpret social comparison messages. That is, upward comparison might be considered as being more informative and providing a picture of rosy future (e.g., my health status can be better and be as good as the comparison target; upward identification), as well as being more threatening and might lead information seekers to be more uncertain and anxious about the health issues (e.g., my health status can not be as good as the comparison target; upward contrast). Downward comparison might be considered as improving the comparer's mood and maintaining self-image (e.g., my health status can not be as bad as the comparison target; downward contrast), as well as being more negative to cope with the disease (e.g., my health status can get worse and be as bad as the comparison target; downward identification).

Previous researchers have explained these trends in that people relate information of social comparison targets to themselves in two different ways, identification and contrast (Mussweiler & Strack, 2000; Trampe et al., 2007). Depending on if people perceive themselves as consistent with or opposite to the comparison target, social comparisons lead to either positive or negative interpretations of social comparison information. For example, positive interpretations of social comparisons (e.g., upward-identification and downward-contrast) may reduce uncertainty and anxiety. On the contrary, negative interpretations of social comparison (e.g., upward-contrast and downward-identification) may increase uncertainty and anxiety. Therefore, considering that college students who are engaged in information management process about their sexual health might perceive personal information of others in online support groups in four different interpretations, the current study proposes the following hypotheses:

H6: For those who choose upward comparison messages and identify their situation with the comparison target, the interpretation of social comparison is likely to reduce a)

uncertainty discrepancy and b) anxiety about sexual health.

H7: For those who choose upward comparison messages and contrast their situation to the comparison target, the interpretation of social comparison is likely to increase a) uncertainty discrepancy and b) anxiety about sexual health.

H8: For those who choose downward comparison messages and identify their situation with the comparison target, the interpretation of social comparison is likely to increase a) uncertainty discrepancy and b) anxiety about sexual health.

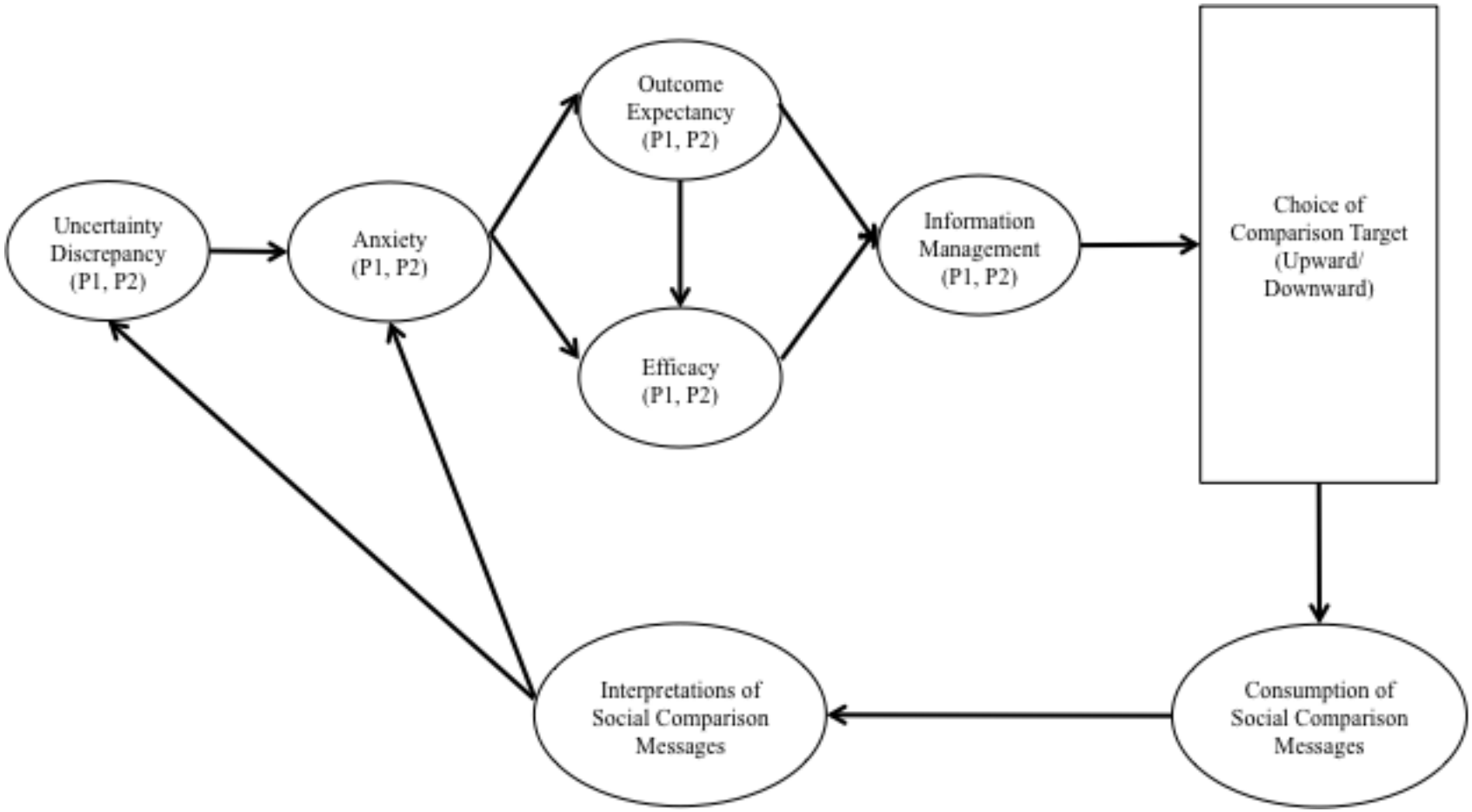
H9: For those who choose downward comparison messages and contrast their situation to the comparison target, the interpretation of social comparison is likely to reduce a) uncertainty discrepancy and b) anxiety about sexual health.

In addition, social comparison theory (Festinger, 1954) has shown that anxious people who perceive uncertainty about a specific issue attempt to reduce uncertainty by seeking relevant information from social sources. As such, online support group information users who are uncertain about their sexual health may try to reduce the level of uncertainty and anxiety by using social comparison information (e.g. case-specific user-created information shared by others in online support groups). Researchers have also argued that people selectively use relatively favorable social comparison information with other targets to reduce their uncertainty and anxiety about serious diseases (Van der Zee, Buunk, Sanderman, Botke, & Van den Bergh, 2000). These efforts to reduce uncertainty and anxiety could be also found from the previous TMIM literature. Researchers suggest that information users sometimes decide to engage in cognitive reappraisal in that they reassess the level of actual or desired uncertainty of an issue. That is, among a wide range of information management options, people cognitively reassess the need for information by reframing their uncertainty (Barbrow, 1992) or anxiety (Afifi & Weiner,

2004). Therefore, based on the social comparison and TMIM literature, the current study proposes the following research question:

RQ2: When people consume social comparison messages to reduce uncertainty and anxiety about the sexual health, how do their cognitive re-assessments influence the overall TMIM process and information management decisions in the subsequent phase?

Figure 2. Extended TMIM Framework



CHAPTER 4

Method

Participants

This study recruited participants for whom the STIs-related issues and information seeking about sexual health were likely to be important and personally salient. Considering that college students are a typical demographic group with a high risk of acquiring STIs who often seek sexual health information from the Internet, the current study used college students as participants. It was expected that the topic of information seeking about sexual health would be relevant to them as the previous literature has pointed out that about 25 percent either have been infected or are currently infected with STIs and 76.5 percent have sought sexual health information from online sources.

Participants were 361 Wayne State University undergraduate students who were recruited from the Department of Communication research participant pool. All participants completed an online experimental survey. The mean age of participants was 22.17 years (SD = 5.01) and ranged from 18 to 55 years. Approximately 67 percent of participants were female (n = 239). Approximately 56 percent of participants were White (n = 202), nearly 21 percent (n = 74) were Black, and the remainder were Hispanic, Asian/Pacific Islander, American Indian/Alaska, and multi-racial. Approximately 48 percent of participants indicated that they were currently single (n = 174), nearly 40 percent were engaged or dating (n = 140), and nearly 6 percent were married (n = 20). See Table 1 for further details.

Table 1. Participant Demographics (N = 361)

Demographics	Frequency	Percent
Gender		
Male	102	28.30
Female	239	66.70
Age		
18	68	18.84
19	62	17.17
20	59	16.34
21	51	14.13
22	37	10.25
23	18	4.99
24	10	2.77
25 – 30	38	10.53
31 – 40	13	3.60
40 – 50	4	1.11
50 –	1	.28
Race		
White	202	55.96
Black	74	20.50
Hispanic	11	3.05
Asian/Pacific Islander	25	6.93
American Indian/Alaska	17	4.71
Multi-racial	25	6.93
Others	7	1.94
Relationship Status		
Single	174	48.20
Engaged or Dating	140	38.78
Married	20	5.54
Divorced	3	.83
Other	24	6.37

Regarding the frequency of sexual intercourse (vaginal, oral, or anal) in the last 12 months, approximately 43 percent of participants indicated that they engaged in some type of sexual intercourse frequently (*n* = 157), and approximately 32 percent of participants reported occasionally (*n* = 114). Approximately 20 percent of participants reported that they have never engaged in any type of sexual intercourse within the last 12 months (*n* = 72). Regarding the frequency of sexual intercourse (vaginal, oral, or anal) in the last 30 days, approximately 32 percent of participants indicated that they engaged in some type of sexual intercourse frequently (*n* = 115), and approximately 30 percent of participants reported occasionally (*n* = 109). Approximately 31 percent of participants reported that they never engaged in any type of sexual intercourse within the last 30 days (*n* = 112).

Regarding the number of sexual partners throughout the entire life, approximately 16 percent of participants indicated that they have engaged in some type of sexual intercourse with 1 partner (*n* = 57), and approximately 66% reported more than 2 partners (*n* = 240). Regarding the number of sexual partners in the last 30 days, approximately 56 percent of participants indicated that they engaged in some type of sexual intercourse with 1 partner (*n* = 201), and approximately 11% reported more than 2 partners (*n* = 39).

Regarding the experience with STIs, although only 13 percent of participants indicated that they have been or are currently infected with STIs (*n* = 46), approximately 50 percent of participants reported that they have a/some close friend(s) who has/have been infected with STIs (*n* = 168). Nearly 81 percent of participants indicated that they have heard of other people who have been or are currently infected with STIs (*n* = 292). See Table 2 for further details.

Table 2. Participant Sexual Health Characteristics (N = 361)

Characteristics	Frequency	Percent
Frequency of Sexual Intercourse (past 12 months)		
Frequently	157	43.49
Occasionally	114	31.58
Rarely	18	4.99
Never	72	19.94
Frequency of Sexual Intercourse (past 30 days)		
Frequently	115	31.86
Occasionally	109	30.19
Rarely	25	6.93
Never	112	31.02
Number of Sexual Partners (entire life)		
0	64	17.73
1	57	15.79
2	34	9.42
3	35	9.70
4	31	8.59
More than 5	140	38.78
Number of Sexual Partners (past 30 days)		
0	121	33.52
1	201	55.68
2	21	5.82
3	9	2.49
4	5	1.39
More than 5	4	1.11
Experience with STIs (past 12 months)		
Have been infected with STIs	46	12.74
Have a/some close friend(s) with STIs	168	46.54
Have heard of other people with STIs	292	80.89

To empirically test the hypotheses and research questions, the study used structural equation modeling (SEM) as the main analytical strategy. Although there are no absolute standards in the literature about the desired sample size of a complex path model, a sample size of 200 or even larger is required for a complicated path model (Kline, 2005). Moreover, Kline (2005) also explained that absolute sample size in estimation methods are offered as follows: small, $N < 100$; medium, N between 100 and 200; and large, $N > 200$. Considering that a desired goal of SEM analyses is to have the ratio of the number of cases to the number of parameters as 20:1, the minimum sample size of this dissertation study was about 180. Since the current number of participants was 361, this sample size seemed adequate for the analyses.

Procedure and Design

The data collection was conducted using Qualtrics, which is a web-based survey site that offers random assignment to experimental conditions. Wayne State University undergraduate students from the Department of Communication's research participant pool were recruited in exchange for nominal extra course credit. Since this study was divided into two phases (see Figure 2), participants received extra credit only when they participated in both phases. Students were given the opportunity to refuse participation in this study and alternative ways of earning course credit were offered for these students.

The procedure for the study was as follows. Upon clicking the link to the online survey, participants were directed to a webpage that provided the study information. On agreement to participate, participants were able to begin the online survey conducted in two phases with a gap of five minutes between the phases. In the first phase, participants were asked to complete a questionnaire that measured demographic and other personal information such as age, gender, race, academic major, residence area, sexual orientation, gender of past and current sexual

partners, sexual behavior history (e.g., number of past and current sexual partners, relationship period, frequency of sexual intercourses), sexual health history, and risk behaviors (e.g., past and current willingness to practice safe/unsafe sexual intercourses). Next, a questionnaire measuring the TMIM variables was presented.

At the completion of the questionnaire, participants were exposed to the stimuli 1, which was a simulated webpage containing four web-search results about sexual health information. This simulated webpage contained four different titles and brief descriptions of the results of a web search that showed two clear directions of social comparisons, upward and downward (i.e., two clear upward comparison messages and two clear downward comparison messages). Since these messages were in the format of web-search results, there was no detailed information other than the obvious direction of social comparisons. To investigate which direction of social comparison was preferred by participants, they were asked to click on the message about which they would like to get further and more detailed information.

Immediately after completing this first phase, participants were guided to the second phase of the study. In the second phase, participants were exposed to the stimuli 2, which consisted of detailed fictitious user-created personal stories including either upward or downward social comparisons. The stimuli 2 was a fictitious thread of user-created information on an online support group about sexual health and STIs, which was containing four different types of detailed narratives (two upward comparison messages and two downward comparison messages).

Participants were randomly assigned to either the upward comparison or the downward comparison condition. After participants read either the upward or downward comparison messages, their interpretation of the social comparison was measured to see how they assessed

the comparison targets' situations in the stimuli 2. Then, to explore the effect of social comparison messages on the cognitive re-assessments in the TMIM process, remaining questions measured the TMIM variables again.

After the completion of this second phase, participants were directed to the debrief webpage, asked not to discuss the content of this study with others, reassured about their course extra credit, and thanked for their participation in the study.

Stimulus Messages and Pilot Test

Social comparison studies in health contexts have argued that people tend to relate their own situation to the situations of similar others when confronted with serious health issues (Suls, Marco, & Tobin, 1991; Taylor, Buunk, & Aspinwall, 1990; Wood, Taylor & Lichtman, 1985). However, Smith and Arnkelsson (2000) criticized that these social comparison studies did not note the systematic comparison dimensions that people use when comparing themselves with others when they are under health threats. Depending on the research topic, researchers have included several different types of social comparison dimensions. For example, Helgeson and Taylor (1993) suggested that physical capacity or current health condition as main comparison dimensions among cardiac patients although the patients in this study also compared others' attitudes, feelings, nature of the problem, the procedures performed, and the progress of disease. Other researchers have pointed out that either the problem severity or coping success of a comparison target operate as the main comparison dimensions among disabled individuals (Gibbons, 1985; Gibbons, Gerrard, Lando, & McGovern, 1991; Ybema & Buunk, 1995). Recently, Buunk, Zurriaga, and González (2006) suggested that people with age-related diseases (e.g., cardiovascular diseases and diabetes) and spinal cord injury compare themselves with others by using the evaluation of the overall situation. Although the concept of the evaluation of

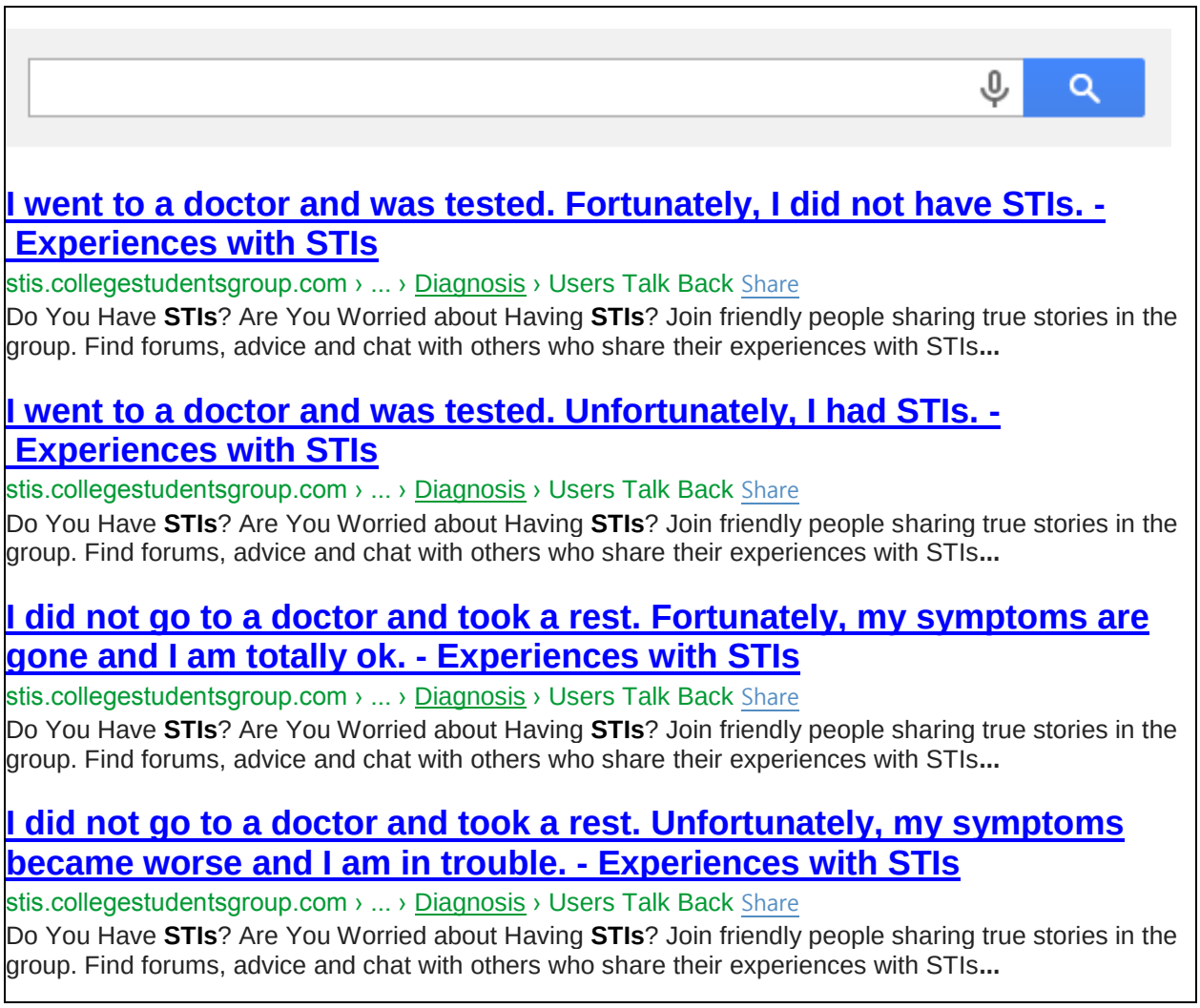
overall situation is broad, these researchers explained that this concept could be examined through mental state (e.g., nerves, anxiety, depression, joy), symptoms (e.g., pain, physical or appearance problems, problems with sleeping, fatigue), physical activities (walking, climbing stairs, household tasks, work), social activities (meeting, going out with friends), way of coping (e.g., positive thinking, talking with others about the problem, act as of nothing has happened), and future perspectives (e.g., optimistic/better future for oneself, pessimistic/worse future for oneself).

Thus, guided by previous social comparison researchers, this study constructed stimuli 1 and stimuli 2 that contained several comparison dimensions in the format of search results (stimuli 1) and detailed user-created information shared in online support groups (stimuli 2). These stimuli were initially created with the help of two undergraduate students whose native language is English and then modified based on the results of a pilot study (N = 14) so that students were able to perceive the obvious directions of social comparisons from the stimuli (e.g., the comparison targets in the stimuli are obviously better off or worse off to participants' own situation).

The stimulus in the first phase (stimuli 1) was simulated search results from an online social support group containing both upward and downward messages. These messages showed a title and brief description about the target's sexual health situation. Although these simulated support group search results showed very limited amount of sexual health information, these messages clearly showed the direction of social comparisons. More specifically, the upward comparison messages included clear evidence that the comparison target is in a better off sexual health situation (e.g., diagnosis – "I went to a doctor and was tested. Fortunately, I did not have STIs."; experiences with STIs symptoms – "I did not go to a doctor and took a rest. Fortunately,

my symptoms are gone and I am totally ok."). The downward comparison messages included clear evidence that the comparison target is in a worse off sexual health situation (e.g., diagnosis – "I went to a doctor and was tested. Unfortunately, I had STIs."; experiences with STIs symptoms – "I did not go to a doctor and took a rest. Unfortunately, my symptoms became worse and I am in trouble."). All messages in stimuli 1 were comparable in terms of length, format, and general content. To increase external validity, real posts from online support groups were extracted and then modified to be comparable in length and similar in style. To prevent order effects, which might be caused by the order of social comparison messages in the stimuli 1, upward and downward comparison messages were randomly distributed across participants. See Figure 3 for further details.

Figure 3. Stimuli 1 (Phase I) – Simulated Search Results



Note. These four Stimuli 1 messages were collapsed into two groups, upward messages and downward messages, for all analyses. Although the four messages implied different situations about experiences with STIs, the current study investigated the choice of social comparison direction, not the choice of specific social comparison situation. Moreover, since around 85% of participants (n = 305) preferred to choose messages that included clearer STIs-related experiences (e.g., experiences about going to a doctor and being tested), the choice of a specific social comparison situation did not necessarily provide more explanation about how information users choose upward or downward social comparison search results. In addition, an omnibus one-way ANOVA was performed with the four messages to test how TMIM variables vary according to participants' choice of message. The results showed that TMIM variables were not significantly different among those four groups of participants. Furthermore, post-hoc pair-wise comparisons between the two upward comparison messages and between the two downward comparison stimuli also did not show any significant differences.

The stimulus for the second phase (stimuli 2) included simulated threads of user-created messages, which looked like complete posts in online support groups. In the stimulus, fictitious comparison targets identified as college students explained their own sexual health and STIs-related situation they had experienced. Guided by the previous social comparison literature, stimuli 2 included messages showing a target person either with very severe symptoms (downward comparison) or no problems (upward comparison); depressed and frustrated about his/her situation (downward comparison) or having no problems at all in coping with his/her situation (upward comparison); and pessimistic (downward comparison) or optimistic (upward comparison) about the future. The stimuli did not reveal any racial or ethnic identity, but each stimuli included messages clearly authored by male and female targets. Since males and females have different STI-related symptoms, treatment schedules, and coping strategies, each message included two counterbalanced posts: one created by a male and the other by a female. In the format of a discussion thread (e.g., an original post and a reply), these messages showed a clear direction of upward or downward social comparison. To increase external validity, real posts from online support groups were extracted and then modified to be comparable in terms of length, format, and general content. See Figure 4 and Figure 5 for further details.

Figure 4. Stimuli 2 (Phase II) – Detailed Narratives about Sexual Health for Upward Comparison Messages

Anonymous

Hi, I am a male college student. I recently had unprotected sex (I used condom, but it slipped off for a brief moment). After that, I noticed acne-like lump on my penile shaft and it became present about a week after the intercourse. This was not huge blemishes or anything like that. Other than this acne, I saw no other symptoms down there (no redness, no irritation, no pain, no burning discharge of any kind, etc). So, I was just getting pretty stressed over the situation whether this was just a bug bite or STIs.

Because I was worried about my situation too much, I went into the doctor and get tested. I was told that it was NOT any type of STIs. The doctor said it looked just like a bug bite and I really did not need to use any medication. For 1-2 days, I still saw the acne, but a few days later, the acne went away. After this experience, there have been no new ones. Fortunately, my situations turned out that I was ok and I did not have STIs. This is really good news to me and I was so happy about it. I was really worried about STIs since I heard that STIs are very common among people in my age. But, It seems that STIs are not as prevalent as it is widely known.

Comment • Share • Thank • Report • 23 Jan

Anonymous

Hello, I am a female college student. I met a guy a month ago and I was so anxious if I caught any STIs from him. I was anxious and stressed because I had a tiny flat bump on my lower lip edge after we had the first intercourse. I knew that tiny bumps on my lip could be due to either STIs or stress/fatigue. It didn't really hurt or anything, not even slight itching. It was just a little uncomfortable. I felt like I was being pinched slightly, just a little in the area. So, I was anxious about my situation if I had STIs or just stress/fatigue.

So, I went to my doctor and got checked. She said it looked like a common bacterial disease, caused by a lot of stress or fatigue. After resting for two full days, it just went away. Because I heard that some STIs are untreatable or it takes a lot of time before the STI is completely cured, I was really worried about it at first. Right now, I'm living in delight and joy without STIs. After this experience, I am far more cautious about using condoms, and now it seems I do not need to worry about my sexual health or STIs any more. I would like to inform people around here that there are STIs-like symptoms, which actually are not STIs.

Comment • Share • Thank • Report • 23 Jan

Figure 4. (continued)

Anonymous

Hi, I am a male college student. I recently had unprotected sex (I used condom, but it slipped off for a brief moment). After that, I noticed acne-like lump on my penile shaft and it became present about a week after the intercourse. This was not huge blemishes or anything like that. Other than this acne, I saw no other symptoms down there (no redness, no irritation, no pain, no burning discharge of any kind, etc). So, I was just getting pretty stressed over the situation whether this was just a bug bite or STIs.

Although I was worried about my situation, I just decided to wait until I find more STIs-like symptoms before I go to a doctor. A few days later, although I really did not use any medication at all, the acne just went away. Thus, I thought that it was just a bug bite or something. After this experience, there have been no new ones so far and I am good now. Fortunately, my situation seems like that I am free from STIs. This is really getting me high and I am so happy that I do not have STIs. I was really worried about STIs since I heard that STIs are very common among people in my age. But, it seems that STIs are not as prevalent as it is widely known.

Comment • Share • Thank • Report • 23 Jan

Anonymous

Hello, I am a female college student. I met a guy a month ago and I was so anxious if I caught any STIs from him. I was anxious and stressed because I had a tiny flat bump on my lower lip edge after we had the first intercourse. I knew that tiny bumps on my lip could be due to either STIs or stress/fatigue. It didn't really hurt or anything, not even slight itching. It was just a little uncomfortable. I felt like I was being pinched slightly, just a little in the area. So, I was anxious about my situation if I had STIs or just stress/fatigue.

Although I am not a health professional, I just decided to rest at home instead of seeing a doctor. First, it was not severe at all and second, I felt that it was caused by fatigue. After resting for two full days, it just went away. I did not see any other bumps or something until today. Because I heard that some STIs are untreatable or it takes a lot of time before the STI is completely cured, I was worried with my bumps at first. But, right now, I'm living in delight and joy without STIs. After this experience, I am far more cautious about using condoms, and now it seems I do not need to worry about my sexual health or STIs. I would like to inform people around here that there are also STIs-like symptoms, which actually are not STIs.

Comment • Share • Thank • Report • 23 Jan

Figure 5. Stimuli 2 (Phase II) – Detailed Narratives about Sexual Health for Downward Comparison Messages

Anonymous

Hi, I am a male college student. I recently had unprotected sex (I used condom, but it slipped off for a brief moment). After that, I noticed acne-like lump on my penile shaft and it became present about a week after the intercourse. This was not huge blemishes or anything like that. Other than this acne, I saw no other symptoms down there (no redness, no irritation, no pain, no burning discharge of any kind, etc). So, I was just getting pretty stressed over the situation whether this was just a bug bite or STIs.

Because I was worried about my situation too much, I went into the doctor and get tested. I was told that it was a form of mild STI. I got a shot (a single shot treatment of antibiotics to treat it) and had oral antibiotics. At first, the acne went away. But soon afterwards, warts appeared and I have had three treatment of cryotheraphy every two weeks or so. Unfortunately, the situation is just worsening. This is really getting me down and I would be so happy if I could at least see an improvement. I was really worried about STIs since I heard that STIs are very common among people in my age. And, It seems that STIs are truly very prevalent as it is widely known.

Comment • Share • Thank • Report • 23 Jan

Anonymous

Hello, I am a female college student. I met a guy a month ago and I was so anxious if I caught any STIs from him. I was anxious and stressed because I had a tiny flat bump on my lower lip edge after we had the first intercourse. I knew that tiny bumps on my lip could be due to either STIs or stress/fatigue. It didn't really hurt or anything, not even slight itching. It was just a little uncomfortable. I felt like I was being pinched slightly, just a little in the area. So, I was anxious about my situation if I had STIs or just stress/fatigue.

So, I went to my doctor and got checked. She said it looked like a mild STI, a bacterial disease. Using two different medications, I tried to manage the STI, but I had a second outbreak, which was more severe, after a month. Because I heard that some STIs are untreatable or it takes a lot of time before the STI is completely cured, I am extremely frustrated and mentally broken. After this experience, I was far more cautious about using condoms, but now it seems the worst case scenario has come true and maybe I just need to vent. I would like to inform people around here that STIs are very prevalent and painful.

Comment • Share • Thank • Report • 23 Jan

Figure 5. (continued)

Anonymous

Hi, I am a male college student. I recently had unprotected sex (I used condom, but it slipped off for a brief moment). After that, I noticed acne-like lump on my penile shaft and it became present about a week after the intercourse. This was not huge blemishes or anything like that. Other than this acne, I saw no other symptoms down there (no redness, no irritation, no pain, no burning discharge of any kind, etc). So, I was just getting pretty stressed over the situation whether this was just a bug bite or STIs.

Although I was worried about my situation, I just decided to wait until I find more STIs-like symptoms before I go to a doctor. At first, although I really did not use any medication at all, the acne just went away. Thus, I thought that it was just a bug bite or something. But soon afterwards, warts appeared and I have had three treatment of cryotheraphy every two weeks or so. Unfortunately, the situation is just worsening. This is really getting me down and I would be so happy if I could at least see an improvement. I was really worried about STIs since I heard that STIs are very common among people in my age. And, It seems that STIs are truly very prevalent as it is widely known.

Comment • Share • Thank • Report • 23 Jan

Anonymous

Hello, I am a female college student. I met a guy a month ago and I was so anxious if I caught any STIs from him. I was anxious and stressed because I had a tiny flat bump on my lower lip edge after we had the first intercourse. I knew that tiny bumps on my lip could be due to either STIs or stress/fatigue. It didn't really hurt or anything, not even slight itching. It was just a little uncomfortable. I felt like I was being pinched slightly, just a little in the area. So, I was anxious about my situation if I had STIs or just stress/fatigue.

Although I am not a health professional, I just decided to rest at home instead of seeing a doctor. First, it was not severe at all and second, I felt that it was caused by fatigue. After resting for two full days, the bump seemed to disappear. However, I had a second outbreak after a month. Because I heard that some STIs are untreatable or it takes a lot of time before the STI is completely cured, I am extremely frustrated and mentally broken. After this experience, I was far more cautious about using condoms, but now it seems the worst case scenario has come true and maybe I just need to vent. I would like to inform people around here that STIs are very prevalent, severe and painful.

Comment • Share • Thank • Report • 23 Jan

A pilot test to norm the stimuli was conducted to ensure that the comparison targets in the messages were perceived in the designed directions of social comparison manipulations. Fourteen participants voluntarily completed a survey with three questions. Two items were asked to judge the overall sexual health situation of the comparison target and the participants own sexual health situation with a 7-point Likert-scale ranging from 1 (not in a severe situation at all) to 7 (extremely in a severe situation). An additional item was asked for participants to judge the sexual health situation of comparison targets in comparison to themselves using a 7-point Likert-scale ranging from -3 (my own situation of sexual health is much better than the situation of people in the online support group messages) to 3 (my own situation of sexual health is much worse than the situation of people in the online support group messages). The pilot study results showed that all stimuli were clearly identifiable as either upward or downward comparison messages. See Table 3 for further details. Based on additional unstructured interviews with these 14 people after they had filled out the questionnaire, the stimuli were further modified to achieve their final form.

Table 3. Pilot Study Descriptive Statistics (N = 14)

Stimuli	Mean	Standard Deviation	Min	Max
Stimuli 1 (Upward Comparison Messages)	3.00	.00	.00	3.00
Stimuli 1 (Downward Comparison Messages)	-3.00	.00	-3.00	0.00
Stimuli 2 (Upward Comparison Messages)	2.65	1.18	1.00	3.00
Stimuli 2 (Downward Comparison Messages)	-2.86	1.03	-3.00	- 1.00

Measurement

The current research study collected data related to demographics, sexual health history, the TMIM variables (Phase I and Phase II), and social comparison interpretation. The measurement instruments are described next.

Sexual behavior history. Guided by previous research (Bauermeister, Giguere, Carballo-Diéguez, Ventuneac, & Eisenberg, 2010; Moyer-Gusé, 2010), participants were asked about their sexual behavior history with six items. Depending on the question, participants were provided with answer options as open-ended response or a 7-point Likert-scale ranging from 1 (never) to 7 (frequently). The six items were, "Within the last 12 months, how often have you engaged in any type of sexual intercourse, such as vaginal, oral, or anal sexual behavior, with a partner?," "Within the last 30 days, how often have you engaged in any type of sexual intercourse, such as vaginal, oral, or anal sexual behavior, with a partner?," "For your entire life, with how many sexual partners have you engaged in any type of sexual intercourse?," "Within the last 30 days, with how many sexual partners have you engaged in any type of sexual intercourse?," "For your entire life, how many times have you contracted any type of STIs (sexually transmitted infections)?," and "Within the last 30 days, how many times have you contracted any type of STIs (sexually transmitted infections)?"

Sexual health risk. Guided by previous research (Arnett, 1996; Chapin, 2001), participants were asked four items about their sexual health risk. A 7-point Likert-scale ranging from 1 (never) to 7 (always) was used. The four items were, "Within the last 12 months, how often did you practice safe sexual intercourse (e.g., using condoms/female condoms, dental dams, medical gloves, or clean sex toys)?," "Within the last 30 days, how often did you practice safe sexual intercourse (e.g., using condoms/female condoms, dental dams, medical gloves, or

clean sex toys)?," "Within the last 12 months, how often did you engage in unprotected sexual intercourse (e.g., having sexual intercourse without condoms/female condoms, dental dams, medical gloves, or clean sex toys)?," and "Within the last 30 days, how often did you engage in unprotected sexual intercourse (e.g., having sexual intercourse without condoms/female condoms, dental dams, medical gloves, or clean sex toys)?"

Uncertainty discrepancy. Guided by Afifi and Weiner (2006), a four-item instrument was developed to measure the difference between participants' current and desired levels of uncertainty regarding their own sexual health. A 7-point Likert-scale ranging from 1 (strongly disagree) to 7 (strongly agree) was used. The four items were, "I am certain that I have enough information about my sexual health," "I want to know more than I currently know about my sexual health," "I might know less than I'd like to know about my sexual health," and "I wish I knew more about my sexual health status."

Uncertainty-related anxiety. To maintain consistency with prior TMIM studies (Afifi & Weiner, 2006), the current study included traditional TMIM items to measure feelings of anxiety. Participants were asked to respond to two items, "It worries me to think about how little I know compared to how much I should know about my sexual health," and "It makes me anxious to think about the difference between how much I should know about my sexual health and how much I actually know" using response options on a 7-point Likert-scale ranging from 1 (strongly disagree) to 7 (strongly agree). In addition, a third item was included: "The size of the similarity/difference between how much I know and how much I should know about my sexual health is _____. " Response options were on a 7-point Likert-scale ranging from 1 (extremely comforting) to 7 (anxiety-producing).

Emotional responses. Guided by Fowler and Afifi (2011), the current study also

measured emotional responses to uncertainty discrepancy. Participants were asked to rate the degree to which they experience 18 possible emotional responses to the uncertainty discrepancy: frustrated, sad, upset, calm, inspired, disappointed, angry, irritable, encouraged, anxious, scared, thoughtful, distressed, happy, worried, pensive, nervous, and secure. Response options were on a 7-point Likert-scale ranging from 1 (not at all) to 7 (extremely).

Outcome expectancy. Participants responded to five questions using a 7-point Likert-scale ranging from 1 (strongly disagree) to 7 (strongly agree) for measuring outcome expectancy. The five items were, "The benefits associated with searching others' experiences with STIs are major," "Searching for others' situation (symptom, treatment, …) about their sexual health would have positive outcomes," "There are a lot more benefits than there are problems in searching others' experiences with their STIs," and "The benefits associated with searching others' experiences with their sexual health are important."

Efficacy. To measure efficacy, participants were asked nine items using a 7-point Likert-scale ranging from 1 (strongly disagree) to 7 (strongly agree). Following previous literature, the current research measured efficacy by considering three different types: coping, target, and communication efficacy. Coping efficacy was measured with the following three items: "I would have no problem coping with discovering other's STIs-related experiences, whatever they may be," "I can handle whatever I would find out about other's STIs-related experiences," and "I would not be able to deal with what I might find out related to this issue (R)." Target efficacy was measured with the following three items: "I feel that I am able to obtain information about sexual health from others in online support groups," "Online support group members would be very willing to offer their experiences of STIs," and "Online support group members would be very honest about their experiences of STIs." Communication efficacy was measured using the

following three items: “I know how to search and find relevant information about other’s STIs-related experiences,” “I am able to approach what other people wrote about their STIs-related experiences,” and “I am able to approach others to talk about STI-related experiences.”

Information seeking. Information seeking was measured by the amount of information that participants would like to seek from messages in online support groups. Participants were asked three questions: “How much information do you want to seek more about your sexual health and STIs?,” “How much time do you want to seek more about your sexual health and STIs?,” and “How many specific cases of others do you want to seek more to compare your sexual health status and STIs with those targets?” Ratings were made on a 7-point Likert-scale ranging from 1 (not at all) to 7 (a lot).

Interpretations of social comparison. Guided by previous literature (Gibbons & Buunk, 1999; Van der Zee et al., 2000), an interpretation of social comparison scale was used to measure four dimensions of social comparison: upward-contrast social comparison, upward-identification social comparison, downward-contrast social comparison, and downward-identification social comparison. Three items were used to measure each dimension of social comparison (total 12 items). Upward identification was measured with the following three items: “I realized that I do not need to worry about STIs,” “I am pleased that STIs do not pose serious risks to me,” “I will not worry about STIs.” Upward contrast was measured with the following three items: “It is threatening to notice that I might have STIs,” “I feel anxious about my sexual health status,” “I feel depressed realizing that my sexual health status can be worse.” Downward identification was measured with the following three items: “I am afraid that my sexual health may decline,” “I fear that my sexual health status will be similar to their cases,” “I fear that I will go along the same way with their situations.” Downward contrast was measured the following three items: “I am

happy that my sexual health status is good," "I feel relieved about my own sexual health status," "I realize how well I am protecting myself from STIs." All ratings for these twelve questions were made on a 7-point Likert-scale ranging from 1 (not at all) to 7 (strongly).

Additional variables. The study also measured additional variables that were used as control variables. These were, demographics, e-health literacy, frequency of social comparison, and social comparison orientation.

Demographic variables. The study also measured demographic variables including age, gender, race, academic major, residence area, relationship status, and family income. Answer options for these questions were open-ended response or multiple choices.

eHealth literacy scale (eHEALS) was measured to see if participants (i.e., college students) had essential knowledge and skills to obtain high quality personal information about sexual health in online support groups. Including both concepts of health literacy and information literacy, eHEALS has been used in a variety of studies to measure information seeking knowledge and skills about communication technologies (e.g., the Internet), ability to evaluate the quality of obtained health information, and self-perceptions about information seeking skills (Norman, 2011). However, as the use of eHealth grows in the informational landscape created by new technologies, Norman (2011) has pointed that new items (e.g., confidence in expressing oneself clearly in social interactions online, ability to synthesize professional and non-professional advice, comfort in navigating through information obtained through new technologies, and ability to use and filter relevant and trustworthy information) should be included in the original scale. Thus, participants were asked twelve items using a 7-point Likert-scale ranging from 1 (strongly disagree) to 7 (strongly agree). Questions included "It is easy for me to decide in which kinds of situations I need health-related information," "I know

which sources to turn to in order to obtain health-related information," "It is easy for me to find the health information I need from the information sources I use," "I obtain too much health-related information," "It is easy for me to determine whether health information is trustworthy or not," "I learn many new things from the health-related information I obtain," "I know how to use the health information I obtain to take care of my health," and "I often have difficulties to understand words or sentences used in health-related information."

Frequency of social comparison is the frequency with which participants make comparisons to comparison targets in the encountered sexual health situation. Items for measuring this were, "In general, how often do you compare yourself with others who are performing better than you do?," "In general, how often do you compare yourself with others who are performing worse than you do?," "In general, how frequently do you compare yourself to other people's situation regarding a variety of issues (e.g., your anticipated ability to confirm STIs, to test infections, to be troubled by STIs-related symptoms, to tolerate the daily life with STIs or worries about STIs, to cope with STIs, etc.)?," and "How frequently do you compare yourself to other people's situation in the story about their emotions and interpersonal relationships?" Ratings were made on a 7-point Likert-scale ranging from 1 (not at all) to 7 (very frequently).

Social comparison orientation was measured to understand individual differences in the frequency of comparing oneself with others. Using the Iowa-Netherlands Comparison Orientation Measure (INCOM; Gibbons & Buunk, 1999), social comparison orientation indicates the general tendency of people to engage in social comparisons and to be affected by social comparisons. The items for the scale were, "I often compare myself with others with respect to what I have accomplished in life," "If I want to learn more about something, I try to find out

what others think about it," "I always pay a lot of attention to how I do things compared with how others do things," "I often compare how my loved ones (boy or girlfriend, family members, etc) are doing with how others are doing," "I always like to know what others in a similar situation would do," "I am not the type of person who compares often with others (R)," "If I want to find out how well I have done something, I compare what I have done with how others have done," "I often try to find out what others think who face similar problems as I face," "I often like to talk with others about mutual opinions and experiences," "I never consider my situation in life relative to that of other people (R)," and "I often compare how I am doing socially (e.g., social skills, popularity) with other people." Ratings were made on a 7-point Likert-scale ranging from 1 (strongly disagree) to 7 (strongly agree).

Statistical Analyses

The primary data analytic technique used to analyze the data was structural equation modeling (SEM) using the AMOS (Analysis of Moment Structure) and Stata/SE 12 statistical program. SEM was used to test the hypotheses and research questions proposed for the study. SEM incorporates indicator (observed) and latent (unobserved) variables, which are separated into a measurement model and a structural equation model. The measurement model shows the reliability and validity of the indicator variables in measuring latent variables. The structural equation model shows the direct and indirect relationships among the latent variables. Since the present study investigates the inter-variable relationships in the proposed extended TMIM model, all the hypotheses and research questions were tested by using path analyses in the structural equation model.

Given the two separate phases of the proposed framework, three separate SEMs were conducted: First run tested Hypothesis 1, Hypothesis 2, Hypothesis 3, Hypothesis 4, and

Research Question 1 using the measurements of Phase I; the second run of multi-group SEM tested Hypothesis 6, Hypothesis 7, Hypothesis 8, Hypothesis 9 using the measurements of Phase II; and the third run tested Research Question 2 using the measurements of Phase II. According to the recommended level for the test of significance (Hu & Bentler, 1999), several goodness of fit criteria, including the model chi-square, the Steiger-Lind root mean square error of approximation (RMSEA) with its 90% confidence interval (Steiger, 1990), the Bentler comparative fit index (CFI; Bentler, 1990), the goodness of fit index (GFI), were used to assess if the proposed model fits the data. In addition, the dependent variable for Hypothesis 5 (choice of social comparison) was a binary variable with upward comparison = 0 and downward comparison = 1. To model this dichotomous outcome variable and show the log odds of the outcome as a linear combination of the predictor variables, this study included logistic regression as an additional analysis.

CHAPTER 5

Results

Unlike previous studies (Afifi & Weiner, 2006; Afifi & Afifi, 2009; Fowler & Afifi, 2011), this study analyzed all of the variables of the TMIM framework separately in two phases. Although previous studies have included pre-interaction data (e.g., uncertainty discrepancy, anxiety, outcome expectancy, and efficacy assessments) and post-interaction data (e.g., information management strategies) in one structural equation model, the results of previous studies provided limited explanation about the long term cognitive re-assessments process. Moreover, by investigating information management process separately, the current analytical strategy allows this dissertation study to explain how the subsequent information management process differs from the initial information management process (i.e., before and after seeking social comparison user-created messages shared in online support groups). Therefore, to investigate the TMIM framework in Phase I, Time 1 data were used for all model predictors (uncertainty discrepancy, emotion, outcome expectancy, efficacy assessments, and information management). To investigate the TMIM framework in Phase II, Time 2 data were used for all model predictors (uncertainty discrepancy, emotion, outcome expectancy, efficacy assessments, and information management). Following previous studies as a guide (Afifi & Weiner, 2006; Fowler & Afifi, 2011), this study also considered three variables as covariates in the model: eHealth literacy scale, frequency of social comparison, and social comparison orientation. These variables were used as covariates to allow examination of the TMIM framework's utility after removing effects of these variables. No variable showed clear evidence that it improved overall model fit and contributed significant paths to this study's TMIM framework. As a result, this study did not include any covariates in the TMIM analysis. See Table 4 for further details.

Table 4. Variable Intercorrelations

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	M	SD
1	-														5.346	1.041
2	.084	-													4.135	1.883
3	.104	.692**	-												4.573	1.127
4	-.084	.139	.122	-											3.860	1.592
5	-.191*	.215*	.178*	.611**	-										3.047	1.606
6	.143	.196*	.170*	.188**	.140**	-									4.575	1.366
7	.316*	.127	.161*	.159*	-.149**	.427**	-								4.764	1.128
8	.099	.195*	.188*	.264**	-.184**	.410**	.357**	-							4.201	1.258
9	.113*	-.003	.073	-.116*	-.181**	-.112*	.082	-.037	-						5.167	1.500
10	-.145*	.186*	.147	.716**	.577**	.187**	.080	.334**	-.109*	-					3.823	1.541
11	-.117	.128	.129*	.541**	.709**	.109**	-.048	.183**	-.103	.675**	-				3.047	1.675
12	.091	.210*	.415**	.148**	-.123*	.459**	.381**	.475**	.008	.252**	.216**	-			4.313	1.385
13	.168	.254	.281*	.110*	-.090*	.285**	.670**	.349**	.137*	.062	-.064	.566**	-		4.752	1.120
14	.005	.190*	.192*	.273**	-.248**	.326**	.233**	.605**	-.085	.350**	.272**	.535**	.344**	-	3.968	1.238

1. eHealth literacy scale; 2. Frequency of social comparison; 3. Social comparison orientation; 4. Uncertainty discrepancy (P1); 5. Anxiety (P1); 6. Outcome expectancy (P1); 7. Efficacy (P1); 8. Information seeking (P1); 9. Interpretation of social comparison; 10. Uncertainty discrepancy (P2); 11. Anxiety (P2); 12. Outcome expectancy (P2); 13. Efficacy (P2); 14. Information Seeking (P2)

*** Significant at $p < .001$ level

* Significant at $p < .05$ level

In order to determine whether participants perceived stimuli 1 (upward and downward simulated search results) and stimuli 2 (upward and downward detailed narratives about sexual health) appropriately as they were intended, paired sample *t* tests were conducted for each stimuli. For both stimuli, results consistently indicated that participants perceived them as they were purposefully created. For the comparison messages in stimuli 1, data showed that participants perceived the direction of social comparison as they were originally intended (M = .568, SD = .496), $t(360) = 5.246$, $p > .05$. For the comparison messages in stimuli 2, participants also perceived the direction of comparison messages as they were originally intended (M = .506, SD = .500), $t(360) = -12.563$, $p > .05$. Participants who answered the direction of social comparison in the unexpected manner were not deleted from the following analyses for two reasons. First, although the messages of both stimuli were carefully created to reflect both upward and downward comparison targets, there might be a chance that participants actually experience more extreme sexual health status. For example, participants who were experiencing the most severe STIs-related symptom might perceive the simulated downward comparison messages in the stimuli as upward comparison messages. Second, the current study included the interpretation of social comparison, not the direction of social comparison, as a main construct in the theoretical framework. Since the social comparison literature has highlighted how people relate social comparison information to themselves (i.e., identification and contrast), these participants' interpretation of social comparison could bring us better a understanding about the information management process. The current data did not show any evidence that participants either did not read, pay attention to, or could not comprehend, the experimental online survey,

A structural equation model (using Amos 16.0 and Stata/SE 12 statistical program) was conducted to test how the TMIM framework predicts college students' information management

strategies related to sexual health. Guided by Anderson and Gerbing (1988), the two-step approach was conducted to establish both measurement and structural models. First, a measurement model was tested with efficacy as a second-order latent factor. For each factor, the unstandardized loading of the first indicator variable was set to 1.0 and the factors were allowed to correlate. The results showed the existence of multicollinearity among coping, target, and communication efficacy. Given the significant correlation among these three efficacy-related variables, the current study constructed an efficacy factor that includes coping, target, and communication efficacy. The additional exploratory factor analysis (EFA) with Principal Component Analysis (PCA) extraction method clearly showed that 9 items construct one factor with 69.66 percent of total variance explained using the eigenvalue criteria of 1 (α = .845). The measurement model was consistent with data and established cutoff values, χ^2 = 566.13; df = 14; p > .05; RMSEA = .065; CFI = .903; GFI = .861. See Table 5 for further details.

A second measurement model was then tested, consisting of five first-order factors (i.e., uncertainty discrepancy, anxiety, outcome expectancy, efficacy, and information seeking) in both phases. The fit of this measurement model was acceptable with all standardized factor loadings above .70. In addition to SEM's measurement model, the current study also conducted factor analyses for each construct of TMIM framework to increase validity and reliability of those measurements: uncertainty discrepancy, anxiety, outcome expectancy, efficacy, and information management strategies. The EFA with PCA extraction method based on varimax rotation showed all factors to be unidimensional. Cronbach's α also indicated strong internal consistency for all factors. See Table 6 for further details.

Table 5. Reliabilities, Pearson Correlations, and Descriptive Statistics for Coping, Target, and Communication Efficacy Variables

Constructs	1	2	3	*M*	*SD*
1. Coping Efficacy	.850[a]			4.855	1.473
2. Target Efficacy	.402***[b]	.803[a]		4.593	1.328
3. Communication Efficacy	.418***[b]	.601***[b]	.791[a]	4.849	1.402

[a] Scale reliability (Cronbach's α)
[b] *** Correlation is significant at $p < .01$ level (2-tailed)

Table 6. Exploratory Factor Analyses with Principal Component Analysis Extraction Method, and Descriptive Statistics for TMIM Variables

Constructs	Percent of total variance explained	Cronbach's α	*M*	*SD*
Uncertainty Discrepancy (P1)	78.388	.862	3.860	1.592
Anxiety (P1)	89.794	.943	3.047	1.606
Outcome Expectancy (P1)	73.703	.881	4.575	1.366
Efficacy (P1)	84.938	.911	4.764	1.128
Information Seeking (P1)	80.508	.879	4.201	1.258
Uncertainty Discrepancy (P2)	80.025	.875	3.823	1.541
Anxiety (P2)	92.068	.957	3.047	1.675
Outcome Expectancy (P2)	85.813	.905	4.313	1.385
Efficacy (P2)	87.620	.858	4.752	1.120
Information Seeking (P2)	93.074	.925	3.968	1.238

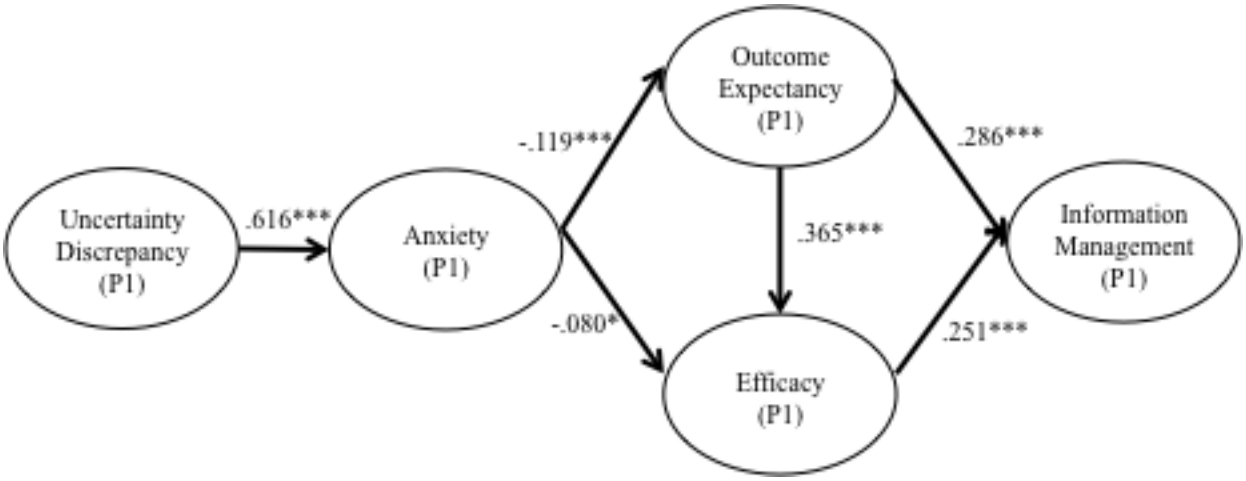
Note. (P1) indicates that those variables were measured in Phase I. (P2) indicates that those variables were measured in Phase II.

Testing Hypotheses and Research Questions

The hypotheses and research questions were tested mainly via structural equation modeling (SEM). Guided by Afifi and Afifi (2009), the error variance for each of the observed variables was fixed to a score computed by multiplying (1 - α) in order to enhance the overall fit of the model and control measurement error. Four fit indices were used to assess the empirical model fit with the theoretically expected model: chi-square, root mean square error of approximation (RMSEA), comparative fit index (CFI), and goodness of fit index (GFI). In addition to reporting the chi-square (low chi-square relative to degrees of freedom with a nonsignificant *p* value), this study followed the guidelines that the model should be lower than .07 for RMSEA, and exceed .95 for CFI and GFI (Hu & Bentler, 1999; Kline, 2005).

First, to test Hypothesis 1, Hypothesis 2, Hypothesis 3, Hypothesis 4, and Research Question 1, a SEM was used to evaluate the proposed relationships among the TMIM constructs in Phase I. SEM tests the overall fit of the TMIM framework to the data in Phase I and also provides parameter estimates for the relationships between the TMIM constructs. In this model, Hypothesis 1 predicted that uncertainty discrepancy is positively associated with anxiety; Hypothesis 2 predicted that anxiety is a) negatively associated with outcome expectancy and b) negatively associated with efficacy; Hypothesis 3 predicted the mediation role of efficacy in that the influence of outcome expectancy on the information seeking is mediated by efficacy; Hypothesis 4 predicted that efficacy is positively associated with the information seeking; and, Research Question 1 asked a) if the current TMIM framework provides a good empirical fit with the data in the context of sexual health and the user-created messages shared in online support groups and b) if the individual paths in the TMIM framework are supported. For further details, the TMIM framework tested through SEM is shown in Figure 6.

Figure 6. TMIM Hypothesized Model in Phase I (H1 – H4, and RQ1)



*** Significant at $p < .001$ level
* Significant at $p < .05$ level

The SEM results supported all hypotheses, Hypothesis 1 – Hypothesis 4. The fit indices of the SEM showed that the current data in the context of sexual health and the user-created messages shared in online support groups provide a tenable empirical model fit because the slight short of the conventional standards for good model fit has been considered as acceptable (Hu & Bentler, 1999): χ^2 = 346.845; *df* = 4; $p > .05$; RMSEA = .126; CFI = .934; GFI = .835. Moreover, in regards to the Research Question 1, all predicted paths in the current TMIM framework were statistically significant. The standardized path coefficients, which indicate the relationships between the TMIM constructs, are presented in Table 7.

Table 7. Standardized Path Coefficients in the TMIM Model (Phase I)

Paths	Coefficient	Standard Error	Significance	Confidence Interval (95%)	
Uncertainty Discrepancy → Anxiety	.616	.043	***Sig.	.532	.700
Anxiety → Outcome Expectancy	-.119	.046	***Sig.	-.029	-.208
Anxiety → Efficacy	-.080	.035	*Sig.	-.148	-.013
Outcome Expectancy → Efficacy	.365	.040	***Sig.	.285	.445
Outcome Expectancy → Information Seeking	.286	.049	***Sig.	.189	.382
Efficacy → Information Seeking	.251	.060	***Sig.	.134	.367

*** Significant at $p < .001$ level
* Significant at $p < .05$ level

Hypothesis 5 predicted that college students under a higher threat of STIs are more likely to choose downward comparison messages than upward comparison messages. To test Hypothesis 5, logistic regression was used to evaluate the choice of social comparison messages. Kline (2011) suggested that the logic of logistic regression should guide dichotomous outcomes in SEM. Although the predictors can be either continuous or categorical, the regression equation in logistic regression approximates a nonlinear relation between the dichotomous outcome and a linear combination of the predictors. Therefore, although bivariate analyses or path analyses might provide a glimpse of the associations between the TMIM constructs and the choice of social comparisons, logistic regression analysis allow this dissertation to explain by how much more likely each TMIM predictor increases the probability of the outcome (i.e., the choice of social comparison messages in this case).

The results did not support Hypothesis 5. As shown in the Model 1 of Table 8, the data showed that the higher level of uncertainty and anxiety were not related to the choice of downward comparison search results. An additional analysis with Model 2 was conducted to see how TMIM variables are related to the choice of social comparison messages. The Model 2 of Table 2 indicated that efficacy is statistically related to the choice of downward comparison messages. That is, for every one unit increase in a participant's efficacy (as measured by a 7-point scale), as opposed to the other TMIM constructs (e.g., uncertainty discrepancy, anxiety, outcome expectancy, and information seeking), the likelihood of choosing downward comparison messages increased by 1.405 times. For further details, Table 9 shows descriptive statistics of TMIM constructs between participants who chose upward comparison messages and participants who chose downward comparison messages.

Table 8. Logistic Model Results (Random Slope Models)

Variables	*Model 1*			*Model 2*		
	Estimate (SE)	*OR*	*Confidence Interval*	*Estimate (SE)*	*OR*	*Confidence Interval*
Uncertainty Discrepancy (P1)	-.021(.086)	.979	[.826, 1.159]	-.043(.092)	.958	[.800, 1.147]
Anxiety (P1)	-.007(.086)	1.007	[.851, 1.191]	-.055(.091)	1.056	[.884, 1.262]
Outcome Expectancy (P1)				.050(.099)	1.051	[.865, 1.277]
Efficacy (P1)				.340(.122)***	1.405	[1.107, 1.784]
Information Seeking (P1)				-.089(.106)	.915	[.744, 1.126]

*** Significant at $p < .001$ level

Table 9. Descriptive Statistics for TMIM Constructs in Phase I (Participants Who Chose Upward Comparison vs Downward Comparison Messages)

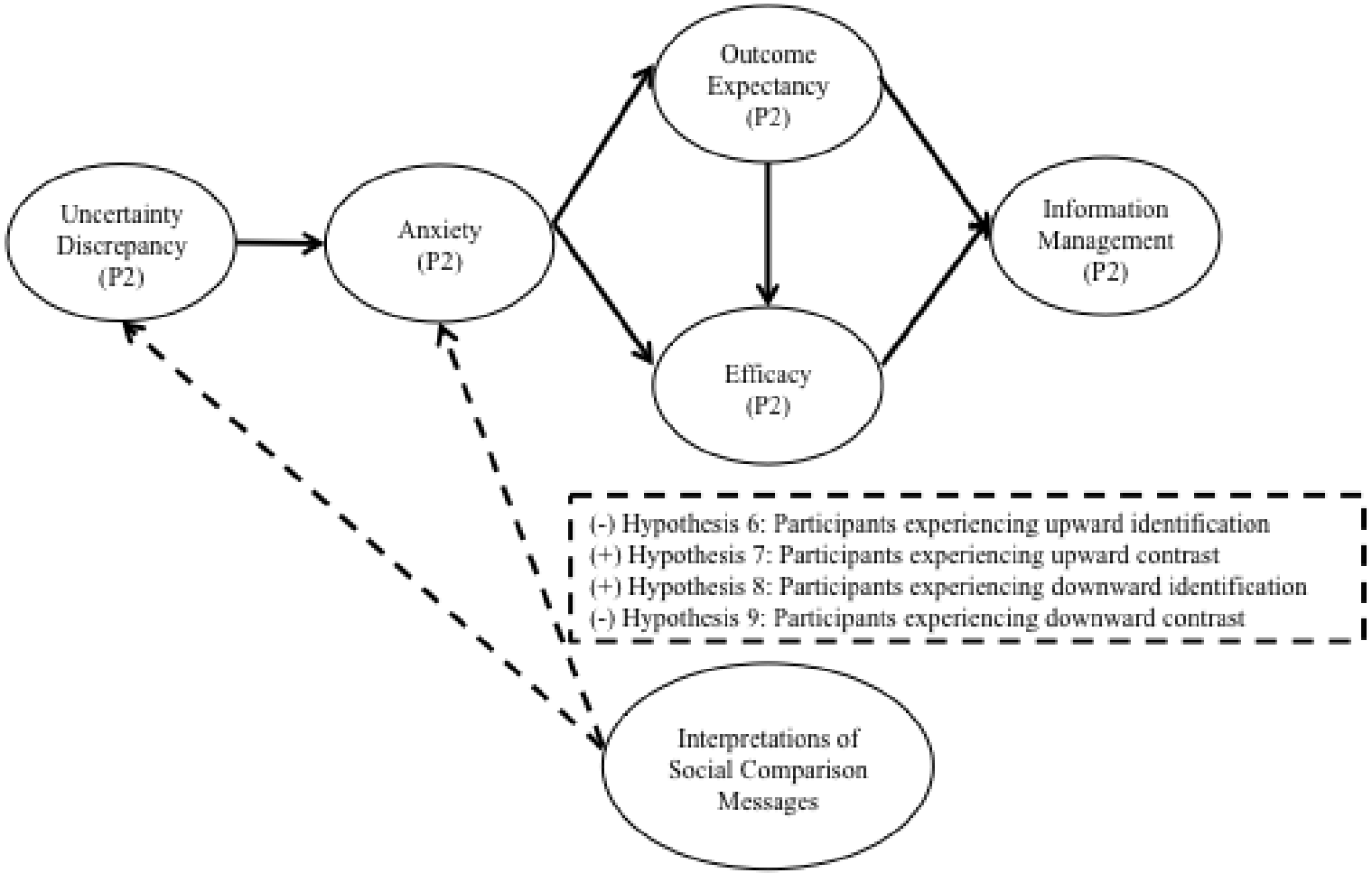
TMIM Constructs	Total (*N* = 361; 100%)		Participants Who Chose Upward Comparison Messages (*n* = 99; 27.42%)		Participants Who Chose Downward Comparison Messages (*n* = 262; 72.57%)		*t (df)*
	M	*SD*	*M*	*SD*	*M*	*SD*	
Uncertainty Discrepancy (P1)	3.86	1.59	3.89	1.58	3.85	1.60	.255 (360)
Anxiety (P1)	3.05	1.61	3.06	1.58	3.04	1.64	.079 (360)
Outcome Expectancy (P1)	4.58	1.37	4.41	1.44	4.70	1.31	-1.888 (360)
Efficacy (P1)	4.76	1.13	4.55	1.22	4.95	1.00	-3.258*** (360)
Information Seeking (P1)	4.20	1.26	4.18	1.14	4.22	1.35	-.210 * (360)

*** Significant at $p < .001$ level

* Significant at $p < .05$ level

Hypothesis 6 predicted that the interpretation of social comparison is likely to reduce a) uncertainty discrepancy and b) anxiety about sexual health for the participants experiencing upward identification; Hypothesis 7 predicted that the interpretation of social comparison is likely to increase a) uncertainty discrepancy and b) anxiety about sexual health for the participants experiencing upward contrast; Hypothesis 8 predicted that the interpretation of social comparison is likely to increase a) uncertainty discrepancy and b) anxiety about sexual health for the participants experiencing downward identification; and Hypothesis 9 predicted that the interpretation of social comparison is likely to reduce a) uncertainty discrepancy and b) anxiety about sexual health for the participants experiencing downward contrast. To test these hypotheses, a multi-group structural equation modeling approach was used to compare four different groups (e.g., participants experiencing upward identification, upward contrast, downward identification, and downward contrast). A multi-group SEM model allowed comparison of specific parameter estimates for the relationships among SEM constructs across these four groups. For the predicted relationships among SEM constructs, see Figure 7.

Figure 7. Multi-group SEM Model



* Dashed line indicates differences of path coefficients among four groups.

The results support Hypothesis 6, Hypothesis 7, Hypothesis 8, and Hypothesis 9. That is, the predicted structural models for each group (participants experiencing upward identification, upward contrast, downward identification, and downward contrast) were supported by the data and the relationships among the constructs showed differences across the groups.

First, the fit indices of the SEM suggested that the data provide a tenable empirical model fit for each group (e.g., Upward identification group: χ^2 =12.016; df = 1; p > .05; RMSEA = .185; CFI = 1.000; Upward contrast group: χ^2 = 13.310; df = 1; p > .05; RMSEA = .132; CFI = .960; Downward identification group: χ^2 = 22.305; df = 1; p > .05; RMSEA = .172; CFI = .870; and Downward contrast group: χ^2 = 13.774; df = 1; p > .05; RMSEA = .198; CFI = .882). Thus, the predicted SEM model for all four groups showed an overall fit of the relationships among the interpretation of social comparison messages, uncertainty discrepancy, and anxiety.

Group specific analyses without constrained parameters for factor loadings and parameter estimates between the predictors showed differences among groups in the predicted paths. All predicted paths in the SEM framework showed that the interpretation of social comparison messages reduces uncertainty discrepancy and anxiety about sexual health for those who choose upward comparison messages and identify their situation with the comparison target (Hypothesis 6) and for those who choose downward comparison messages and contrast their situation with the comparison target (Hypothesis 9). On the other hand, predicted paths in the SEM framework showed that the interpretation of social comparison messages increases uncertainty discrepancy and anxiety about sexual health for those who choose upward comparison messages and contrast their situation with the comparison target (Hypothesis 7) and for those who choose downward comparison messages and identify their situation with the comparison target (Hypothesis 8). The standardized path coefficients, which indicate the relationships among SEM constructs are

presented in Table 10. Descriptive statistics of TMIM constructs and ANOVA results are shown in Table 11. The differences for these SEM constructs among four groups were also evident in the additional correlation analysis for each group. The results of correlation analysis among the SEM constructs are in Table 12.

Table 10. Standardized Path Coefficients in SEM Model for Upward Identification, Upward Contrast, Downward Identification, and Downward Contrast Groups

Groups: Participants Experiencing	Paths	Coefficient	Standard Error
Upward Identification	Interpretation of Social Comparisons → Uncertainty Discrepancy (P2)	-.248*	.090
	Interpretation of Social Comparisons → Anxiety (P2)	-.598*	.126
	Uncertainty Discrepancy (P2) → Anxiety (P2)	.647***	.079
Upward Contrast	Interpretation of Social Comparisons → Uncertainty Discrepancy (P2)	.458***	.136
	Interpretation of Social Comparisons → Anxiety (P2)	.570***	.149
	Uncertainty Discrepancy (P2) → Anxiety (P2)	.402***	.125
Downward Identification	Interpretation of Social Comparisons → Uncertainty Discrepancy (P2)	.614***	.128
	Interpretation of Social Comparisons → Anxiety (P2)	.754***	.123
	Uncertainty Discrepancy (P2) → Anxiety (P2)	.320*	.135
Downward Contrast	Interpretation of Social Comparisons → Uncertainty Discrepancy (P2)	-.276*	.127
	Interpretation of Social Comparisons → Anxiety (P2)	-.360***	.095
	Uncertainty Discrepancy (P2) → Anxiety (P2)	.706***	.062

*** Significant at $p < .001$ level
* Significant at $p < .05$ level

Table 11. Descriptive Statistics for TMIM Constructs among the Upward Identification, Upward Contrast, Downward Identification, and Downward Contrast Groups

TMIM Constructs	Total (N = 361; 100%)		Participants Experiencing Upward Identification (n = 108; 29.92%)		Participants Experiencing Upward Contrast (n = 71; 19.67%)		Participants Experiencing Downward Identification (n = 33; 9.14%)		Participants Experiencing Downward Contrast (n = 149; 41.00%)		Statistics
	M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	
Uncertainty Discrepancy (P2)	3.83	1.54	3.17	1.48	4.41	1.38	4.65	1.29	3.86	1.51	$F(3, 358) = 13.377^{***}$
Anxiety (P2)	3.05	1.67	2.27	1.44	3.65	1.64	4.52	1.39	3.03	1.60	$F(3, 358) = 20.206^{***}$
Outcome Expectancy (P2)	4.31	1.38	4.07	1.50	4.56	1.18	4.24	1.39	4.39	1.37	$F(3, 358) = 1.855$
Efficacy (P2)	4.75	1.12	4.66	1.22	4.61	.96	4.39	1.40	4.94	1.04	$F(3, 358) = -2.768^{**}$
Information Seeking (P2)	3.97	1.24	3.85	1.38	4.12	1.06	4.27	.86	3.93	1.26	$F(3, 358) = .301$

*** Significant at $p < .001$ level
** Significant at $p < .05$ level

Table 12. Correlations and Descriptive Statistics for SEM Model among the Upward Identification, Upward Contrast, Downward Identification, and Downward Contrast Groups

Groups: Participants Experiencing	Constructs	1	2	3	*M*	*SD*
Upward Identification	1. Interpretation of Social Comparisons	-			5.089	1.573
	2. Uncertainty Discrepancy (P2)	-.263***	-		3.175	1.483
	3. Anxiety (P2)	-.169*	.624***	-	2.274	1.438
Upward Contrast	1. Interpretation of Social Comparisons	-			3.856	1.161
	2. Uncertainty Discrepancy (P2)	.387***	-		4.414	1.384
	3. Anxiety (P2)	.536***	.495***	-	3.647	1.644
Downward Identification	1. Interpretation of Social Comparisons	-			4.333	1.411
	2. Uncertainty Discrepancy (P2)	.673***	-		4.655	1.294
	3. Anxiety (P2)	.862***	.683***	-	4.524	1.386
Downward Contrast	1. Interpretation of Social Comparisons	-			5.998	0.981
	2. Uncertainty Discrepancy (P2)	-.179 *	-		3.864	1.514
	3. Anxiety (P2)	-.332***	.700***	-	3.028	1.605

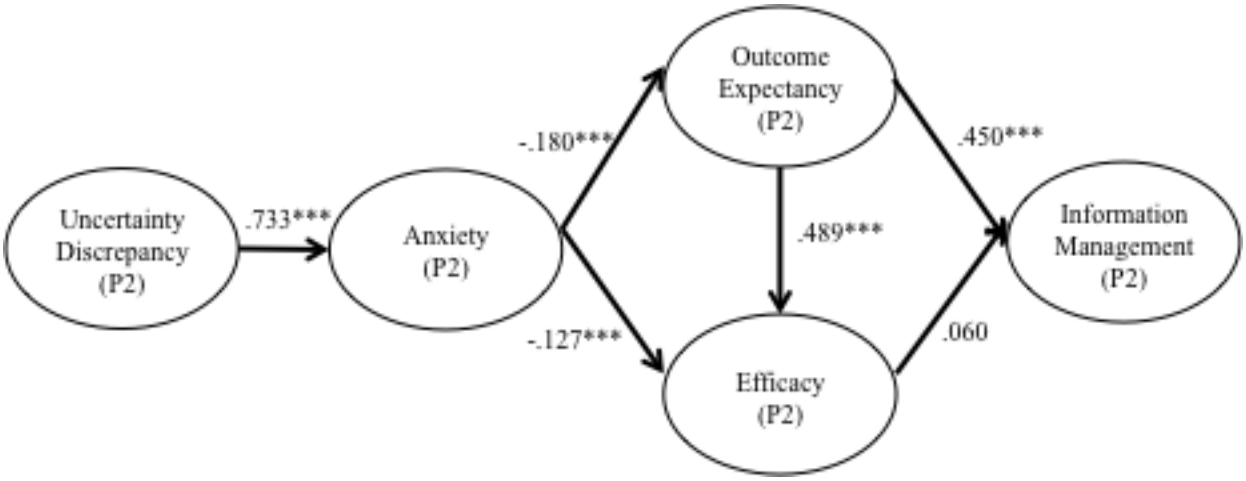
*** Significant at $p < .001$ level

* Significant at $p < .05$ level

To test Research Question 2, SEM was used to evaluate the proposed relationships among the TMIM constructs in Phase II. Research Question 2 asked how the cognitive re-assessments (i.e., changes in uncertainty discrepancy and anxiety) influence the overall TMIM process and information management decisions in the subsequent phase after participants consume social comparison messages about sexual health. See Figure 7 for further details.

The SEM analysis tested the overall fit of the TMIM framework to the data in Phase II and also provided parameter estimates for the relationships among the TMIM constructs. Although there was the slight short of the conventional standard for good model fit, the fit indices of the SEM suggest that the data in the context of sexual health and the user-created messages shared in online support groups provide a tenable empirical model fit for the model tested for Research Question 2 (χ^2 = 35.532; *df* = 4; $p > .05$; RMSEA = .148; CFI = .936; GFI = .758). The modification indices (i.e., LaGrange Multiplier or Wald test) did not specify paths that would significantly improve the current model fit if they were included or excluded. All predicted paths in the TMIM framework but a path (between efficacy and information seeking) were significant. That is, efficacy in Phase II does not directly predict information seeking (coefficient = .060, SE = .063, $p = .344$). The standardized path coefficients, which indicate the relationships among the TMIM constructs, are presented in Table 13.

Figure 8. TMIM Model in Phase II (RQ2)



*** Significant at $p < .001$ level
* Significant at $p < .05$ level

Table 13. Standardized Path Coefficients in the TMIM Model (Phase II)

Paths	Coefficient	Standard Error	Significance	Confidence Interval (95%)	
Uncertainty Discrepancy (P2) → Anxiety (P2)	.733	.044	***Sig.	.632	.808
Anxiety (P2) → Outcome Expectancy (P2)	-.180	.044	***Sig.	-.093	-.273
Anxiety (P2) → Efficacy (P2)	-.127	.031	***Sig.	-.148	-.013
Outcome Expectancy (P2) → Efficacy (P2)	.489	.037	***Sig.	.255	.645
Outcome Expectancy (P2) → Information Seeking (P2)	.450	.051	***Sig.	.408	.576
Efficacy (P2) → Information Seeking (P2)	.060	.063	Not Sig. (p = .344)	-.012	.122

*** Significant at $p < .001$ level
* Significant at $p < .05$ level

CHAPTER 6

Discussion

Overview

The motivation for this dissertation came from the fact that sexually transmitted infections (STIs) are highly prevalent among college students (Hou, 2009; Kanekar & Sharma, 2010; Patel, Zochowski, Peterman, Dempsey, Ernst, & Dalton, 2012). On average, 1 out of 4 college students have been infected with STIs and so they often seek sexual health information because they are uncertain about the nature of the symptoms and progression of the infections (Buhi, Daley, Fuhrmann, & Smith, 2009). Interestingly, most college students seek information about sexual health from the Internet, not from health professionals or family members. Among the diverse sources of online health information, the present study investigated the information created by anonymous others in online settings, such as online support groups. Considering that information seekers search and pay attention to others' stories and narratives about their health issues (e.g., the experience of symptoms, diagnosis, disease progression, medication and treatment, side effects of treatment, daily experiences of living with the infections, and the long-term consequences of treatment), the purpose of the present study was to provide more in-depth knowledge about information management strategies in online settings, increase understanding of how information seekers (i.e., college students in this case) manage their uncertainty about sexual health when performing social comparisons with others in similar situations, and draw attention to the importance of how information seekers cognitively deal with such social comparison messages.

Specifically, this dissertation examined the cognitive procedures related to how active information seekers utilize user-created messages shared in online support groups to manage

their uncertainty about sexual health, and how social comparisons to others influence their information management strategies. Do information users refer to others' stories and narratives to manage their uncertainty about sexual health? Do they prefer a specific direction of social comparison messages (e.g., upward or downward)? How do they interpret the social comparison messages and how does the interpretation influence the whole information management process in a subsequent phase of information seeking? To answer these questions, this dissertation interweaves two theoretical frameworks: the theory of motivated information management and social comparison theory. The theory of motivated information management (TMIM; Afifi & Weiner, 2004) explains how information users interpret the uncertainty about their sexual health, evaluate outcome expectancies and efficacies, and finally make a decision to seek further information from others. At the same time, social comparison theory explains the consequences of different types of social comparisons and how the interpretation of social comparison is related to the subsequent information management process. In the situation where people are easily exposed to others' stories and narratives about their health issues in an online setting, the findings of this dissertation can advance theoretical and practical knowledge in the field of health communication and contribute our knowledge about the cognitive process of health-related information seeking.

Summary and Explanation of Results

Previous TMIM literature has included pre-interaction data (e.g., uncertainty discrepancy, anxiety, outcome expectancy, and efficacy assessments) and post-interaction data (e.g., information management strategies) in one theoretical and analytical framework. However, the results of previous studies have provided limited explanation about the changes to the cognitive procedures in a repetitive process of information management. Reflecting that information users

typically continue seeking health-related information shared by others multiple times rather than just once, it is important to understand how people adjust the initial level of uncertainty discrepancy and anxiety throughout the iterative information management process. Instead of merely making a single decision to seek further information about a topic, people also reassess the need for information by re-evaluating their uncertainty (Barbrow, 1992) or anxiety (Afifi & Weiner, 2004) after their initial information management actions. Therefore, considering that information seeking is not a one-time event, analysis of cognitive re-assessments during the repetitive information management process provides us more knowledge about how information users consistently redvise information management strategies over time in the TMIM framework. Since information users possibly re-evaluate the desired level of uncertainty discrepancy and uncertainty-related anxiety throughout the information management process, this dissertation study analyzed the two TMIM frameworks in separate phases.

In the first phase, Hypotheses 1, 2, 3, and 4, and Research Question 1 were proposed to explain the initial information management process. Then, Hypothesis 5 was posited to explain how the TMIM framework in the first phase is related to actual consumption of social comparison messages (i.e., user-created messages shared in online support groups). In the second phase, Hypotheses 6, 7, 8, and 9, and Research Question 2 were proposed to explain how the subsequent information management process is affected by information users' interpretation of social comparison messages after consuming user-created messages shared in online support groups.

The first hypothesis posited that uncertainty discrepancy would be positively associated with anxiety. The data supported the hypothesis. As the original TMIM framework (Afifi & Weiner, 2004) suggested, a discrepancy between the actual uncertainty and desired uncertainty

(i.e., uncertainty discrepancy) leads to anxiety. Although other TMIM literature (Afifi & Morse, 2009) has proposed that uncertainty discrepancy might produce a wider range of emotional responses (e.g., frustrated, sad, upset, calm, inspired, disappointed, angry, irritable, encouraged, anxious, scared, thoughtful, distressed, happy, worried, pensive, nervous, and secure) than anxiety alone, the current dissertation focused on anxiety because participants may experience this emotion as the most clear response to the topic of sexual health and STIs. Thus, guided by the original TMIM framework (Afifi & Weiner, 2004) and previous STIs-related TMIM work (Afifi & Weiner, 2006), the results showed clear evidence that uncertainty discrepancy leads to anxiety in the context of STIs and sexual health among college students. Therefore, the result confirmed that anxiety could be considered as a central emotional response created by uncertainty discrepancy in the context of college students' sexual health information management process.

The second hypothesis posited that anxiety would be a) negatively associated with outcome expectancy and b) negatively associated with efficacy. The findings support the hypothesis. As predicted, anxiety regarding uncertainty discrepancy was negatively related to the two cognitive assessments in the evaluation phase. As Afifi and Weiner (2004) explained, people are motivated to manage the physiological reaction of anxiety by making assessments about the expected outcomes of an information search (outcome expectancy) and the perceived ability to gain the sought-after information (efficacies). Moreover, in the evaluation phase, the TMIM framework highlights the mediating role of anxiety in that anxiety-reduction drive, not awareness of uncertainty discrepancy, leads to the subsequent process of information management. Afifi and Afifi (2009) also suggested that reduction of anxiety is the central predictor and motivational force to guide the whole information management process. Given the TMIM literature linking

anxiety to the cognitive assessments in the evaluation phase, the current study also confirmed that anxiety serves as a predictor of the TMIM variables (e.g., outcome expectancy and efficacy) in the evaluation phase.

The third hypothesis posited that the influence of outcome expectancy on information seeking would be mediated by efficacy. The data supported the hypothesis. Afifi and Weiner (2004) noted that the strength of the mediating relationships depends on outcome expectancy. For example, efficacy has a salient impact on the effect of outcome expectancy on information management when people expect negative outcomes from an information search. That is, for those who believe information seeking would be time consuming, difficult, and with a lot of relational threats, they weigh more on the ability and resources to successfully perform information management process, communication skills, and the ability and honesty of a target person. Thus, especially for those who anticipate negative outcome expectancy, efficacy is more likely to mediate the impact of outcome expectancy on the information management strategies. For those who believe information seeking is simple, straightforward, and with little relational threats, efficacy is less likely to mediate the influence of outcome expectancy on information seeking. Since coping and communication efficacy play a smaller role in their decision to seek further information, people who have positive outcome expectancy merely focus on target efficacy (Afifi & Weiner, 2004). Therefore, outcome expectancy influences efficacy, which then directly impacts information management choices.

The fourth hypothesis posited that efficacy would be positively associated with information seeking. The findings support the hypothesis. Considering that TMIM has highlighted the role of three specific efficacies (communication, coping, and target) in the information management process, the current study confirmed that efficacy plays an important

role as a predictor of further information seeking. In the present study, these three types of efficacies showed multicollinearity, which required constructing a single factor (i.e., efficacy). A question arises, why did these three efficacies show significantly high correlation? When there is overwhelming amount of collaborative and cumulative messages shared by others in online support groups, information users may have learned how to narrow their own interests into a certain sub-topic and then obtain specific relevant information from other anonymous users. Then, with effective search tools and high health information literacy, information users might consider these three types of efficacy similarly in their information management process in online settings.

For example, during the process where people search for information they exactly need out of the huge amount of user-created messages, information users may not distinguish between their skills to extract necessary information successfully (i.e., communication efficacy) and other people's ability and willingness to provide relevant information (i.e., target efficacy). That is, people might believe that their information management achievement might be due to either their own communication skill to search for necessary information or others' ability and willingness to give relevant information. Moreover, those who believe that they have the emotional, instrumental, and network resources to manage their information seeking process (i.e., coping efficacy) might also believe that they have sufficient information seeking skills to complete the communication tasks successfully (i.e., communication efficacy). Although the Internet contains inaccurate health information shared by others, information users with high online health information literacy might know how to narrow down their searches to the relevant information. As the participants of this study showed that they have relatively high eHealth literacy (M = 5.34, SD = 1.04), these information users with high communication efficacy are more likely to know

where and how to obtain credible and useful information (i.e., high target efficacy), thus distinguishing these efficacies might not be required in online information seeking contexts.

The first research question focused on the overall consistency of the TMIM framework in the context of sexual health and user-created messages shared in online support groups by asking: a) does the overall TMIM model provide a good empirical fit with the data? and b) are the individual paths in the TMIM framework supported? Results of this dissertation showed good success in the TMIM theory's general ability to predict information seeking in the context of college students' sexual health and user-created message shared in online support groups. The overall model fit was good and the individual paths among the TMIM constructs were consistent with TMIM predictions in this context. This result may not be surprising, but the findings of this dissertation provide significant contributions to the current literature on TMIM. First, by studying the topic of college students' sexual health, this dissertation expanded the application of TMIM into additional health topics. Second, although previous TMIM literature mainly focused on information seeking via interpersonal exchanges in face-to-face settings, this dissertation makes a significant contribution by investigating interpersonal information management that takes place via the Internet and among user-created messages shared in online support groups. Given that the common topics of TMIM literature have been characterized as interpersonal conversations about health and relational issues (Fowler & Afifi, 2011), this dissertation confirmed that TMIM provides a suitable framework for investigating college students' information management about sexual health in online settings.

The fifth hypothesis posited that higher uncertainty and anxiety are more likely to be related to the choice of downward comparison messages than upward comparison messages. Although previous social comparison literature has found that people who are under a

threatening situation prefer downward comparisons (Buunk & Ybema, 1995; Gibbons, 1985; Tennen, McKee, & Affleck, 2000; Van der Zee, Buunk, de Ruiter, Tempelaar, van Sonderen, & Sanderman, 1996), the data did not support Hypothesis 5. The question then is, what accounts for this difference in the predictors of choosing downward comparison messages? Considering that the current study conducted an experiment with participants from the Department of Communication research participant pool, the characteristics of current participants might be related to this result. As discussed earlier, only 12.74% of the participants actually had experience with STIs within the past 12 months. Compared to the national data, which shows that 25% of typical college students either have been infected or are currently infected with STIs, the STIs infection rate among the current participants was merely a half of the national average. Although approximately 47% of participants indicated that they knew a close friend who had STIs and approximately 80% answered that they have heard of other people who were infected with STIs, the participants in the current study might not recognize their own susceptibility, vulnerability, and risk of STI infection. Moreover, the participant pool mostly consisted of students in introductory level courses. Since 52% of the participants were in the age range of 18-20 years, the topic of STIs and sexual health might not have been as salient as other important issues, such as academic, social, and financial challenges. While most college students encounter challenges during their transition to college, students who take introductory level courses (e.g., first-year college student) might experience more uncertainty and anxiety from the academic and social challenges than from sexual health issues. In addition, approximately 15% of participants indicated that they are above 25 years old. Considering that usual college age range is between 18 and 22, these participants might be different from the typical traditional college student. While these participants work full-time and return to college to further their career (e.g., non-

traditional college students), they might have more concerns about academic responsibilities and family or career-related issues.

Although Hypothesis 5 was not supported, the additional analysis regarding the impact of TMIM constructs on the choice of social comparison messages provided valuable findings to explain the mechanism how information users prefer and consume specific social comparison messages. The data showed two interesting findings. First, there was a strong tendency for participants to choose downward comparison messages (72.57%) than upward comparison messages (27.42%) to pursue further information about the topic. As shown in Figure 3, stimuli 1 was a simulated webpage containing four search results of social comparison messages containing both upward and downward comparison messages. When participants were asked to click on a specific search result, approximately 73% of participants choose downward comparison messages. This result showed that information users prefer to seek further and detailed information from downward comparison targets. Wills (1981, p. 268) explains this phenomenon as follows: "A basic fact about human life is that people experience frustration, failure, or misfortune. The theory of downward comparison elucidates the fact that a way to make oneself feel better (aside from putting the matter out of mind and turning to other things) is to compare oneself with other persons who are equally unfortunate or more unfortunate." Therefore, participants were more likely to choose downward comparison messages to see others who experience more sexual health trouble or are in worse sexual health situation than their current status. By searching for further detailed information from the downward comparison messages, people might accept their current sexual health situation as something they can easily cope with, feel sympathy to others in a worse situation, and recognize that their situation is relatively fortunate.

Second, although uncertainty discrepancy and anxiety were not directly related to the choice of downward comparison messages, the finding provides clear evidence that efficacy predicts the choice of downward comparison messages (Odds Ratio: 1.405). Although previous social comparison literature suggested that higher level of uncertainty, anxiety, and perceived threats are related to the choice of downward comparison, the results from the present study showed that efficacy leads to the choice of downward social comparison. Then, what makes efficacy, but neither uncertainty discrepancy nor anxiety, as a main predictor for choosing downward comparison messages? One of the possible explanations can be the efficiency of cognitive processes in online information seeking (Mussweiler & Epstude, 2009). While people are exposed to overwhelming amount of user-created messages from the Internet, they have limited capacity and time to deal with the overload of information. Since reading all messages shared by others is an almost impossible task, downward comparisons may limit the range of necessary information to be read while at the same time enabling information users to find solutions for their own sexual health issues objectively. According to Bandura and Jourden (1991), people who have stronger efficacy tend to focus their attention on analyzing and figuring out appropriate solutions to their problems. Since higher efficacy allows people to conduct more analytical thinking (Bandura, 2007), people with high efficacy may be more likely to choose downward comparison messages to obtain knowledge about possible solutions to their current or future problems. Another explanation could be that information users tried to improve their self-image and subjective well-being by choosing downward comparison messages. For example, information users with high efficacy might want to set a goal as seeking the worst sexual health scenario to plan coping strategies and feel better and relieved. According to Bandura (1997), efficacy regulates the level of motivation to maintain information seeking efforts and set

information management goals. Thus, when people are worried about their sexual health but do not experience any noticeable STIs-related symptoms, those who have high efficacy might purposefully seek downward comparison messages to be relieved that their situation is better than comparison targets and to plan potential coping strategies.

The sixth, seventh, eighth, and ninth hypotheses were about the impact of the interpretation of social comparison on the cognitive re-assessments in the second phase of the study. That is, depending on how people identified or contrasted themselves with the comparison targets, the dissertation investigated how the interpretation of social comparison messages influenced the level of uncertainty discrepancy and anxiety. Based on the previous social comparison literature, four hypotheses were proposed regarding the consequences of how people interpret social comparison messages. The sixth hypothesis posited that the interpretation of social comparison would reduce a) uncertainty discrepancy and b) anxiety about sexual health for those who choose upward comparison messages and identify their situation with the comparison target (i.e., upward identification group). The seventh hypothesis posited that the interpretation of social comparison would increase a) uncertainty discrepancy and b) anxiety about sexual health for those who choose upward comparison messages and contrast their situation to the comparison target (i.e., upward contrast group). The eighth hypothesis posited that the interpretation of social comparison would increase a) uncertainty discrepancy and b) anxiety about sexual health for those who choose downward comparison messages and identify their situation with the comparison target (i.e., downward identification group). The ninth hypothesis posited that the interpretation of social comparison would reduce a) uncertainty discrepancy and b) anxiety about sexual health for those who choose downward comparison messages and contrast their situation to the comparison target (i.e., downward contrast group).

As predicted, the results supported all of these hypotheses.

These findings provide a valuable contribution to the current TMIM literature. Although cognitive re-assessment has been suggested as one of the psychological management options for information seekers in their information management process (Afifi & Weiner, 2004), the previous TMIM literature has provided limited explanation of how information seekers psychologically adjust the original need for information. Although the dissertation did not examine why people either identify or contrast themselves with social comparison targets, the results showed that social comparisons do play an important role in cognitive re-assessments during an extended information management process. Mussweiler and Strack (2000) noted that social comparisons lead to either positive or negative interpretations depending on how people perceive themselves as consistent with or opposite to the comparison targets. Therefore, strategic choices of either upward or downward comparison messages help information users re-evaluate the initial level of uncertainty discrepancy and anxiety, which influences the whole information management process in the subsequent phase. Considering that health-related information seeking is often a cyclical process over an extended term and is completed when the uncertainty discrepancy and anxiety are eliminated or reduced to a sufficiently low level, information users might continuously seek specific information they are interested in to control uncertainty discrepancy and anxiety.

The second research question focused on how the cognitive re-assessments influence the overall TMIM process and information management decisions in the subsequent phase. That is, when people consume social comparison messages, this research question explored how information users re-assess uncertainty discrepancy and anxiety about their sexual health and how these cognitive re-assessments guide the following information management process.

Results of this dissertation showed good success in the TMIM theory's ability to predict the information management process. However, although the overall model fit was good, the path between efficacy and information seeking was not significant. That is, efficacy in the second phase did not directly predict information seeking. The question then is, while TMIM framework argues that efficacy generally plays an important role as a predictor of further information seeking, why the efficacy in the second phase did not show a similar result?

One explanation could be that people do not necessarily evaluate efficacy multiple times when they utilize user-created messages shared in online support groups. Previous TMIM literature (Afifi & Afifi, 2009) notes that efficacy assessments involve information seekers' perceptions about how they believe their own ability to search for specific information successfully from a particular source or how they believe a target person is willing to provide such information honestly. More specifically, the construct of efficacy has been investigated with three different types of efficacy-related judgments: coping, communication, and target efficacies. Coping efficacy refers to how information users believe that they can manage the process and cope with the outcome of the information search; communication efficacy refers to how people perceive their own ability to seek further information effectively from user-created messages shared in online support groups; and target efficacy refers to how people perceive that others in online support groups are able and willing to provide complete information honestly. Since information users have already considered these efficacy-related judgments during their initial information management process in the first phase of searching, they might strategically ignore these efficacy-related issues in a subsequent phase of searching. By merely evaluating the benefits and costs of continuing their search (i.e., outcome expectancy) from online support groups, information users might find reasons to continue their information seeking. While

efficacy assessments might not be under consideration repeatedly, this result suggests that outcome expectancy is the most important predictor to make information users continue information seeking with user-created messages shared in online support groups.

Implications for Theory

The results of the study offer at least three implications for the continued development of TMIM. First, this study confirms that TMIM is an effective theoretical tool to explain the information management process in online settings. Afifi and Weiner (2004) proposed that uncertainty discrepancy produces anxiety and leads individuals to an evaluation phase. In the evaluation phase, people evaluate outcome expectancy and efficacy, where efficacy partly mediates the effect of outcome expectancy on information seeking in the following phase. Then, these cognitive assessments result in the information management decisions about whether and how to seek further information. In response to the growing use of the Internet and user-created messages shared in online support groups, this dissertation replicated the TMIM framework to examine how information users perform information seeking in the context of user-created information shared in online support groups. Previous TMIM studies have investigated the information management process in face-to-face settings, and the results of this dissertation provide evidence that the theory can be also applied in online settings. In other words, results showed consistency with previous TMIM expectations and also revealed that all the TMIM predictors can systematically explain college students' sexual health information management process in online settings. This is a unique finding because the results confirmed that TMIM framework provides important guidance not only for the interpersonal information seeking in face-to-face settings, but also for the health-related information seeking in online settings.

Second, this dissertation considered the information management process as extended

over two phases. Although Afifi and Weiner (2004, p. 183) suggested "cognitive reappraisal" as one of the information management options in the decision phase, there has been limited explanation about long-term cognitive re-assessments because researchers have included Time 1 data for all model predictors (e.g., uncertainty discrepancy, anxiety, outcome expectancy, and efficacy) and Time 2 data for the model outcome (information seeking) in a single analytical framework of TMIM (Afifi & Weiner, 2006; Afifi & Afifi, 2009; Fowler & Afifi, 2011). Unlike previous researchers, to explore how user-created messages shared in online support groups influence cognitive assessments in the subsequent information management process, this dissertation separated information management process into two different phases (before and after the exposure to the social comparison stimuli). The findings showed that the interpretation of social comparison is related to the cognitive assessments in the subsequent phase. Unlike other TMIM studies, it was meaningful to see how information users' interpretation of social comparison messages actually reframes their uncertainty discrepancy and anxiety in the subsequent information management phase. To the best of my knowledge, this investigation is the first to systematically apply an extended TMIM framework to understand a repeated information management process.

Third, although efficacy has been considered as the most consistent predictor of an individual's behavior than any other psychological construct (Bandura, 1997), efficacy was not related to information seeking in the subsequent information management process. Although information users consider efficacy at the beginning of the initial information management process, the results showed that efficacy does not directly lead to further information seeking in the second phase. Instead, outcome expectancy was a significant drive to make information users continue seek user-created messages shared in online support groups. Particularly with those

who are seeking health information from the Internet, this finding might provide valuable guideline to the current TMIM framework. Considering that health information users are likely to be under a specific threat of health risks, they would pursue necessary information for a long time. Thus, if these information users perceive information seeking is simple, straightforward, and with little relational threats in a specific online support groups, they would continue seeking further information, using the online support groups, and interacting with other online support group members. However, the importance of efficacy in predicting information seeking seemed to be limited to the initial information management process, so information users do not repeatedly evaluate efficacy in their continuous search for the user-created messages shared in online support groups.

Implications for Practice

The results of the dissertation provide at least two implications for practice. First, social comparison theory helps health communication practitioners to understand the information management process among online information users. Considering that understanding information users' needs and motivations are vital components in designing online health information websites, the findings of this dissertation can provide a guide for health professionals for creating appropriate formats and content for interactive online communication. Specifically, information users' efficacy is predictive of their information seeking behavior for the downward comparison messages shared in online support groups. Since information users prefer to be assured about their future health status by using messages shared by downward comparison targets, this finding might be evidence that information users experience more informational or emotional support from those downward comparison messages.

Second, health care providers should encourage online support group members to share

truthful health experiences and provide appropriate guidance for information users to help them obtain credible information. As shown in the results, information users tend to search for downward comparison messages, such as extreme and extraordinary worst cases as depicted in the stimuli for the dissertation. Therefore, online support group providers must expend efforts to help online support group members share trustworthy and credible information about disease related topics.

Limitations and Suggestions for Future Research

Although the TMIM framework explained the information management process very effectively and the results of this investigation offered valuable knowledge about the process, there are also some limitations to the study that should be noted. First, although the data suggested several interesting findings, the limitations of the sample from the Department of Communication research participant pool may not allow for strong conclusions to be made. Although most participants knew of the risks of STIs and the importance of sexual health, the students from the introductory level courses (e.g., first semester freshmen) might have more severe personal issues and challenges than STIs and sexual health. Future research should include a more diverse college student population to obtain more participants who have experienced STIs and are worried about their sexual health. Second, the experimental stimuli were simulated user-created messages shared in online support groups. Although these social comparison messages allowed this dissertation to measure information users' perceptions toward TMIM variables and interpretations of social comparison messages, it was unclear how closely these messages resemble more natural online support group interactions among users. Therefore, it would be ideal if future studies include more interactive features of online support groups and actually enable participants to join into the online support groups, share their own experiences,

interact with other members, and obtain sexual health related information from the interactions. At the same time, future studies also should consider user-created messages in other sources of online health information including readers' comments and discussions on a news website article. Third, this study explored how social comparison messages are associated with a subsequent information management process. The current results strongly suggest that future TMIM research should explore how information users strategically reframe their uncertainty discrepancy and uncertainty-related anxiety in their long-term information management process by using social comparison information. In addition, since specific individual differences (e.g., frustrating information seeking experience, perceived homophily between information seekers and providers, personal high intensity experience of STIs or awareness of close others with severe STI infection) or unique cultural factors might influence the information management process dramatically, future research should measure such individual differences and cultural factors to specify how information management process differs among diverse information users. Lastly, although previous TMIM literature has emphasized the importance of efficacy in predicting information seeking, this study did not included a specific scale that measures efficacy for online communication (e.g., interpersonal efficacy, Faulkner & Greene, 2002; Internet self-efficacy, Larose, 2000). Considering the unique features of interactions in online settings, the results offer a meaningful guidance for future TMIM research in that general conceptualization of efficacy in the previous TMIM literature should be revisited in the context of online information seeking.

Conclusion

This dissertation marks a meaningful step toward refining and advancing the TMIM framework in the context of college students' management of information about sexual health in

online settings. In line with findings of earlier TMIM studies, this dissertation supports the utility of TMIM as an effective tool to explain the information management process. More specifically, in the context of college students' utilization of user-created messages about sexual health shared in online support groups, findings illuminated the cognitive procedures related to how information seekers use user-generated online messages to manage their uncertainty and how social comparisons to others influence their information management strategies in subsequent searches. Four key findings of this dissertation should be noted. First, results showed that the role of efficacy was important to predict information seeking in the initial information management process. Second, efficacy was more likely to guide the choice of downward comparison messages, which showed that information users prefer to check cases worse than they are for their reference. Third, the interpretation of social comparison messages was related to information users' cognitive re-assessments, which has been explained in a limited manner in the previous TMIM literature. Fourth, although the role of efficacy has been highlighted in TMIM framework, it was the information users' evaluation regarding benefits and costs of information seeking that determined the subsequent information management decisions. Considering that TMIM is relatively a new communication theory that tries to explain information management process in diverse contexts, there still remains significant room for its theoretical development. Future investigations should continue examining the mechanism of how people are motivated to continue seeking additional information and how psychological factors guides their interpretations of this information they find. Moreover, instead of merely highlighting information users' decisions, such as seeking or avoiding further information, future research should explain how cognitive re-assessments benefit or hinder the extended information management process.

APPENDIX A

RESEARCH INFORMATION SHEET

Wayne State University
Research Information Sheet

Title of Study: Social Comparison and Information Seeking: Motivated Management of Sexual Health Information from Online Support Groups

Principal Investigator (PI): *Jehoon Jeon*
Doctoral candidate
Department of Communication
508 Manoogian Hall
jehoon@wayne.edu

Purpose:
You are being asked to be in this research study because you are registered with the Department of Communication Research Participant Pool and have indicated your interest in participating in this study. This study is being conducted at Wayne State University only. The estimated number of study participants to be enrolled at Wayne State University is about 200.

This study looks at the role of social comparison in the management of sexual health information. Specifically, in this study we are looking at the topic of sexually transmitted infections. We are interested in finding out about how you manage the personal sexual health information about sexually transmitted infections that others provide in online support groups.

Study Procedures:
If you take part in the study, you will be asked to answer some questions about your information management strategies when reading sexual health information. In addition, we will ask some background information to help us properly analyze your answers. Then, you will read some messages from online support groups that include personal information provided by others. After reading the messages, you will be again asked about your information management strategies dealing with these messages.

You have the option to skip questions you do not wish to answer. Doing so will not result in any reduction of extra credit that you may receive for your course.

The study will take about 45 minutes to complete.

Your responses will be completely anonymous and will be held completely confidential. Please do not write your name or any other personal identifying information. After completion of the study, the data will be kept for at least five years for reference, but no one will be able to identify you from your responses.

Benefits

- The possible benefit to you for taking part in this research study is that you will become knowledgeable about sexual health and symptoms associated with sexually transmitted infections in particular. Additionally, information from this study may benefit other professionals now or in the future by helping to create more effective messages and advisories related to college students' sexual health.

Risks

- You may experience mild discomfort or mild anxiety. However, this will not be any different from the discomfort or anxiety you may experience when reading about sexually transmitted infections ordinarily. If you experience discomfort or anxiety, you may stop participating in the study at any time you wish.

Costs

- There will be no costs to you for participation in this research study.

Compensation

- You will not be paid for taking part in this study.
- You will receive extra course credit for an eligible course by participating through the Department of Communication research participant pool.

Confidentiality

All information collected about you during the course of this study will be anonymous and will be kept confidential to the extent permitted by law.

- All information collected about you during the course of this study will be kept without any identifiers that can identify you individually.
- You will be identified in the research records only by a unique code. We are not collecting any information that will link your identity with this code.

Voluntary Participation/Withdrawal:

Taking part in this study is voluntary. You may choose not to take part in this study, or if you decide to take part, you can change your mind later and withdraw from the study. You are free to not answer any questions or withdraw at any time. Your decision will not change any present or future relationships with Wayne State University or its affiliates.

Questions:

If you have any questions about this study now or in the future, you may contact Jehoon Jeon at the following phone number (313) 577-2947. If you have questions or concerns about your rights

as a research participant, the Chair of the Human Investigation Committee can be contacted at (313) 577-1628. If you are unable to contact the research staff, or if you want to talk to someone other than the research staff, you may also call (313) 577-1628 to ask questions or voice concerns or complaints.

Participation:
By completing the questionnaire, you are agreeing to participate in this study.

I certify that I am 18 years old or older and, by clicking the submit button to enter the survey, I indicate my willingness voluntarily take part in the study.

- ❍ Yes (1)
- ❍ No (2)

If No Is Selected, Then Skip To End of Survey

APPENDIX B

INSTRUMENTS

Instructions: The following questions will ask you about how you obtain information about your own sexual health. All responses you provide will be completely confidential and anonymous. Please answer all questions as honestly as possible.

In the past 12 months, how often have you used the Internet to look for any type of information about your health in general?

- ❍ Not At All
- ❍ ...
- ❍ ...
- ❍ Somewhat
- ❍ ...
- ❍ ...
- ❍ Frequently

In general, when you seek health-related information, which best describes the way you use the Internet?

- ❍ I use the Internet directly (I can seek health information from the Internet by myself)
- ❍ I benefit from others' use (people seek information for me and let me know about it)
- ❍ I do not use the Internet to look up health information at all

When you have a need to look for general health-related information, where do you generally go first?

- ❍ Books, Magazine, Newspapers, Brochures, Pamphlets, etc.
- ❍ Internet
- ❍ Family
- ❍ Friend/Co-worker
- ❍ Doctor or Health care provider
- ❍ Others – please specify _____

When you have a need to look for specific information about your sexual health, including sexually transmitted infections (STIs), where do you generally go first?

- ❍ Books, Magazine, Newspapers, Brochures, Pamphlets, etc.
- ❍ Internet
- ❍ Family
- ❍ Friend/Co-worker
- ❍ Doctor or Health care provider
- ❍ Others – please specify _____

Is there a specific Internet site you like to go to for general health-related information? Please specify:

Is there a specific Internet site you like to go to for information about sexual health, including sexually transmitted infections (STIs)? Please specify:

Next are statements that describe health-related information seeking and use. Please indicate how much each statement applies to you.

	Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree
It is easy for me to decide in which kinds of situations I need health-related information.	❍	❍	❍	❍	❍	❍	❍
I know which sources to turn to in order to obtain health-related information.	❍	❍	❍	❍	❍	❍	❍
It is easy for me to find the health-related information I need from the information sources I use.	❍	❍	❍	❍	❍	❍	❍
I obtain too much health-related information.	❍	❍	❍	❍	❍	❍	❍
It is easy for me to determine whether health-related information is trustworthy or not.	❍	❍	❍	❍	❍	❍	❍
I learn many new things from the health-related information I obtain.	❍	❍	❍	❍	❍	❍	❍
I know how to use the health-related information I obtain to take care of my health.	❍	❍	❍	❍	❍	❍	❍
I often have difficulty to understand words or sentences used in health-related information.	❍	❍	❍	❍	❍	❍	❍

There are diverse sources of information about sexually transmitted infections (STIs.) From the list below, please indicate how much information you usually obtain about STIs from each source.

	Not At All	...	...	Somewhat	...	...	A Great Deal
Health professionals	❍	❍	❍	❍	❍	❍	❍
Family members	❍	❍	❍	❍	❍	❍	❍
Friends	❍	❍	❍	❍	❍	❍	❍
Traditional Media (e.g., TV, Newspapers, Radio, Magazines, etc.)	❍	❍	❍	❍	❍	❍	❍
New Media (e.g., Internet, SNS, Smartphone Application, etc.)	❍	❍	❍	❍	❍	❍	❍
If you have other sources, please specify here:	❍	❍	❍	❍	❍	❍	❍

Instructions: The following questions deal with your sexual health history and risk of sexually transmitted infections (STIs; e.g., herpes, syphilis, gonorrhea, HIV/AIDS, etc.). All responses you provide will be completely confidential and anonymous. Please answer all questions as honestly as possible.

Within the last 12 months, how often have you engaged in any type of sexual intercourse such as vaginal, oral, or anal sex with a partner?

❍ Never
❍ ...
❍ ...
❍ Occasionally
❍ ...
❍ ...
❍ Frequently

Within the last 30 days, how often have you engaged in any type of sexual intercourse such as vaginal, oral, or anal sex with a partner?

❍ Never
❍ ...
❍ ...
❍ Occasionally
❍ ...
❍ ...
❍ Frequently

Throughout your entire life, with how many sexual partners have you engaged in any type of sexual intercourse? (Please input numbers.)

Within the last 30 days, with how many sexual partners have you engaged in any type of sexual intercourse? (Please input numbers.)

Throughout your entire life, how many times have you contracted any type of STIs (e.g., herpes, syphilis, gonorrhea, HIV/AIDS, etc.)? (Please input numbers.)

Within the last 30 days, how many times have you contracted any type of STIs (e.g., herpes, syphilis, gonorrhea, HIV/AIDS, etc.)? (Please input numbers.)

Below are statements that may describe your situation. Please indicate how much each statement applies to you.

	Yes	No
I am (or have been) infected with STIs.	❍	❍
A friend or some of my friends are (or have been) infected with STIs.	❍	❍
In addition to my friends, I know close people who are (or have been) infected with STIs.	❍	❍
In addition to my friends, I heard about other people who are (or have been) infected with STIs.	❍	❍

Considering your sexual health history and sexual health risk, how likely is it that you may be infected with an STI (e.g., herpes, syphilis, gonorrhea, HIV/AIDS, etc.) sometime in the next 12 months?

❍ Not at all likely
❍ ...
❍ ...
❍ ...
❍ ...
❍ ...
❍ Extremely likely

If you have to choose, which of the following best describes how you think of your sexual orientation?

❍ Heterosexual (Straight)
❍ Mainly Heterosexual
❍ Bisexual with a preference for men
❍ Bisexual
❍ Bisexual with a preference for women
❍ Mainly Homosexual
❍ Homosexual (Gay/Lesbian)
❍ Questioning

Within the last 12 months, how often did you practice safe sexual intercourse (i.e., using condoms/female condoms, dental dams, medical gloves, or clean sex toys)?

- ❍ Never
- ❍ ...
- ❍ ...
- ❍ ...
- ❍ ...
- ❍ ...
- ❍ Always

Within the last 30 days, how often did you practice safe sexual intercourse (i.e., using condoms/female condoms, dental dams, medical gloves, or clean sex toys)?

- ❍ Never
- ❍ ...
- ❍ ...
- ❍ ...
- ❍ ...
- ❍ ...
- ❍ Always

Within the last 12 months, how often did you engage in unprotected sexual intercourse (i.e., not using condoms/female condoms, dental dams, medical gloves, or clean sex toys)?

- ❍ Never
- ❍ ...
- ❍ ...
- ❍ ...
- ❍ ...
- ❍ ...
- ❍ Always

Within the last 30 days, how often did you engage in unprotected sexual intercourse (i.e., not using condoms/female condoms, dental dams, medical gloves, or clean sex toys)?

- ❍ Never
- ❍ ...
- ❍ ...
- ❍ ...
- ❍ ...
- ❍ ...
- ❍ Always

Instructions: STIs (e.g., herpes, syphilis, gonorrhea, HIV/AIDS, etc.) are prevalent among college students. Recent research has noted that 1 out of 4 college students are infected with some type of STI. The following questions deal with how you deal with managing information about STIs. Please answer all questions as honestly as possible.

Below are statements about how much uncertainty you feel in regards to your sexual health status. Please indicate how much each statement applies to you.

	Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree
I am certain that I have enough information about my sexual health status.	❍	❍	❍	❍	❍	❍	❍
I want to know more than I currently know about my sexual health status.	❍	❍	❍	❍	❍	❍	❍
I might know less than I'd like to know about my sexual health status.	❍	❍	❍	❍	❍	❍	❍
I wish I knew more about my sexual health status.	❍	❍	❍	❍	❍	❍	❍

Below are statements about how much anxiety you feel from the lack of information about your sexual health status. Please indicate how much each statement applies to you.

	Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree
It worries me to think about how little I know compared to how much I should know about my sexual health status.	❍	❍	❍	❍	❍	❍	❍
It makes me anxious to think about the difference between how much I should know about my sexual health status and how much I actually know.	❍	❍	❍	❍	❍	❍	❍
The difference between how much I know and how much I should know about my sexual health status produce anxiety.	❍	❍	❍	❍	❍	❍	❍

Please rate the degree to which you experience the following emotions when you are uncertain about your sexual health status.

	Not at all	...	...	Somewhat	...	...	Extremely
Frustrated	❍	❍	❍	❍	❍	❍	❍
Sad	❍	❍	❍	❍	❍	❍	❍
Interested	❍	❍	❍	❍	❍	❍	❍
Happy	❍	❍	❍	❍	❍	❍	❍
Upset	❍	❍	❍	❍	❍	❍	❍
Disappointed	❍	❍	❍	❍	❍	❍	❍
Wishful	❍	❍	❍	❍	❍	❍	❍
Excited	❍	❍	❍	❍	❍	❍	❍
Anxious	❍	❍	❍	❍	❍	❍	❍
Worried	❍	❍	❍	❍	❍	❍	❍
Stimulated	❍	❍	❍	❍	❍	❍	❍
Encouraged	❍	❍	❍	❍	❍	❍	❍
Nervous	❍	❍	❍	❍	❍	❍	❍
Calm	❍	❍	❍	❍	❍	❍	❍

Below are statements about how you think about information seeking about your sexual health, including STIs. Please indicate how much each statement applies to you.

	Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree
When I am worried about STIs, the benefits associated with searching other's experiences with STIs are important.	❍	❍	❍	❍	❍	❍	❍
Searching for other's situations (i.e., symptom, treatment, etc.) about their sexual health would have positive outcomes.	❍	❍	❍	❍	❍	❍	❍
There are more benefits than problems in	❍	❍	❍	❍	❍	❍	❍

searching for other's experiences with STIs. Other's experiences with STIs would produce more positives than negatives.	❍	❍	❍	❍	❍	❍	❍

Below are statements about how you think about information seeking in regards to your sexual health, including STIs. Please indicate how much each statement applies to you.

	Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree
I would have no problem with discovering other people's experiences with STIs, whatever they may be.	❍	❍	❍	❍	❍	❍	❍
I can handle whatever I would find out about other's STIs-related experiences.	❍	❍	❍	❍	❍	❍	❍
I would not be able to deal with what I might find out about others' experiences with STIs.	❍	❍	❍	❍	❍	❍	❍

Below are statements about how you think about others who share their experiences about STIs. Please indicate how much each statement applies to you.

	Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree
On the Internet, people could provide me with information about	❍	❍	❍	❍	❍	❍	❍

sexual health or STIs.							
People would be very willing to offer their experiences of STIs in online settings.	❍	❍	❍	❍	❍	❍	❍
People would be very honest about their experiences of STIs in online settings.	❍	❍	❍	❍	❍	❍	❍

Below are statements about how you think about your ability to seek information about your sexual health and STIs. Please indicate how much each statement applies to you.

	Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree
I know how to search and find relevant information about other's STIs-related experiences.	❍	❍	❍	❍	❍	❍	❍
I am able to search for other people's experiences with STIs.	❍	❍	❍	❍	❍	❍	❍
I know what I need to do to successfully search for STI-related information from others' experiences.	❍	❍	❍	❍	❍	❍	❍

Below are statements about how you would like to seek or avoid information about your sexual health, including STIs. Please indicate how much each statement applies to you.

	Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree

I will seek further information about other people's experiences with STIs in order to be informed about my own sexual health.	❍	❍	❍	❍	❍	❍	❍
I will spend more time seeking further information about others' experiences with STIs for my sexual health.	❍	❍	❍	❍	❍	❍	❍
I will avoid seeking further information about other people's experiences with STIs for my sexual health status.	❍	❍	❍	❍	❍	❍	❍
I will avoid spending more time seeking further information about others' experiences with STIs for my sexual health.	❍	❍	❍	❍	❍	❍	❍
I will seek a lot of specific cases of others to compare my sexual health status and their STIs-related experiences.	❍	❍	❍	❍	❍	❍	❍

Instructions: Next, you will see the results of a web search using a search engine (e.g., Google, Bing, Yahoo, etc.) for finding further information about sexual health, including STIs. What you will see are the top search results. Please first read these search results carefully and then answer the questions that follow.

Please mark the search result that you would be most likely to choose if you were searching for further information about STIs.

❍ I went to a doctor and was tested. Fortunately, I did not have STIs. - Experiences with STIs
stis.collegestudentsgroup.com › ... › Diagnosis › Users Talk Back Share Do You Have STIs? Are You Worried about Having STIs? Join friendly people sharing true stories in the group. Find forums, advice and chat with others who share their experiences with STIs...

❍ I went to a doctor and was tested. Unfortunately, I had STIs. - Experiences with STIs
stis.collegestudentsgroup.com › ... › Diagnosis › Users Talk Back Share Do You Have STIs?

Are You Worried about Having STIs? Join friendly people sharing true stories in the group. Find forums, advice and chat with others who share their experiences with STIs...

- I did not go to a doctor and took a rest. Fortunately, my symptoms are gone and I am totally ok. - Experiences with STIs stis.collegestudentsgroup.com › ... › Diagnosis › Users Talk Back Share Do You Have STIs? Are You Worried about Having STIs? Join friendly people sharing true stories in the group. Find forums, advice and chat with others who share their experiences with STIs...
- I did not go to a doctor and took a rest. Unfortunately, my symptoms became worse and I am in trouble. - Experiences with STIs stis.collegestudentsgroup.com › ... › Diagnosis › Users Talk Back Share Do You Have STIs? Are You Worried about Having STIs? Join friendly people sharing true stories in the group. Find forums, advice and chat with others who share their experiences with STIs...

Instructions: One of the web search results that you read earlier was from an online support group on sexual health, including STIs. Next, from this online support group, you will see some most read posts/messages shared by others about their own experiences with STIs. Please first read these posts carefully and then answer the questions that follow.

Anonymous Hi, I am a male college student. I recently had unprotected sex (I used a condom, but it slipped off for a brief moment). After that, I noticed acne-like lump on my penile shaft and it became present about a week after the intercourse. This was not huge blemishes or anything like that. Other than this acne, I saw no other symptoms down there (no redness, no irritation, no pain, no burning discharge of any kind, etc). So, I was just getting pretty stressed over the situation whether this was just a bug bite or STIs. Because I was worried about my situation too much, I went into the doctor and get tested. I was told that it was NOT any type of STIs. The doctor said it looked just like a bug bite and I really did not need to use any medication. For 1-2 days, I still saw the acne, but a few days later, the acne went away. After this experience, there have been no new ones. Fortunately, my situations turned out that I was ok and I did not have STIs. This was really good news to me and I was so happy about it. I was really worried about STIs since I heard that STIs are very common among people in my age. But, It seems that STIs are not as prevalent as it is widely known.
Comment • Share • Thank • Report • 23 Jan

Anonymous Hello, I am a female college student. I met a guy a month ago and I was so anxious if I caught any STIs from him. I was anxious and stressed because I had a tiny flat bump on my lower lip edge after we had the first intercourse. I knew that tiny bumps on my lip could be due to either STIs or stress/fatigue. It didn't really hurt or anything, not even slight itching. It was just a little uncomfortable. I felt like I was being pinched slightly, just a little in the area. So, I was anxious about my situation if I had STIs or just stress/fatigue. So, I went to my doctor and got checked. She said it looked like a common bacterial disease, caused by a lot of stress or fatigue. After resting for two full days, it just went away. Because I heard that some STIs are untreatable or it takes a lot of time before the STI is completely cured, I was really worried about it at first. Right now, I'm living in delight and joy without STIs. After this experience, I am far more cautious about using condoms, and now it seems I do not need to worry about my sexual

health or STIs any more. I would like to inform people around here that there are STIs-like symptoms, which actually are not STIs.
Comment • Share • Thank • Report • 23 Jan

Anonymous Hi, I am a male college student. I recently had unprotected sex (I used a condom, but it slipped off for a brief moment). After that, I noticed acne-like lump on my penile shaft and it became present about a week after the intercourse. This was not huge blemishes or anything like that. Other than this acne, I saw no other symptoms down there (no redness, no irritation, no pain, no burning discharge of any kind, etc). So, I was just getting pretty stressed over the situation whether this was just a bug bite or STIs. Because I was worried about my situation too much, I went into the doctor and get tested. I was told that it was a form of mild STI. I got a shot (a single shot treatment of antibiotics to treat it) and had oral antibiotics. At first, the acne went away. But soon afterwards, warts appeared and I have had three treatment of cryotheraphy every two weeks or so. Unfortunately, the situation is just worsening. This is really getting me down and I would be so happy if I could at least see an improvement. I was really worried about STIs since I heard that STIs are very common among people in my age. And, It seems that STIs are very prevalent as it is widely known.
Comment • Share • Thank • Report • 23 Jan

Anonymous Hello, I am a female college student. I met a guy a month ago and I was so anxious if I caught any STIs from him. I was anxious and stressed because I had a tiny flat bump on my lower lip edge after we had the first intercourse. I knew that tiny bumps on my lip could be due to either STIs or stress/fatigue. It didn't really hurt or anything, not even slight itching. It was just a little uncomfortable. I felt like I was being pinched slightly, just a little in the area. So, I was anxious about my situation if I had STIs or just stress/fatigue. So, I went to my doctor and got checked. She said it looked like a mild STI, a bacterial disease. Using two different medications, I tried to manage the STI, but I had a second outbreak, which was more severe, after a month. Because I heard that some STIs are untreatable or it takes a lot of time before the STI is completely cured, I am extremely frustrated and mentally broken. After this experience, I was far more cautious about using condoms, but now it seems the worst case scenario has come true and maybe I just need to vent. I would like to inform people around here that STIs are very prevalent and painful.
Comment • Share • Thank • Report • 23 Jan

Anonymous Hi, I am a male college student. I recently had unprotected sex (I used a condom, but it slipped off for a brief moment). After that, I noticed acne-like lump on my penile shaft and it became present about a week after the intercourse. This was not huge blemishes or anything like that. Other than this acne, I saw no other symptoms down there (no redness, no irritation, no pain, no burning discharge of any kind, etc). So, I was just getting pretty stressed over the situation whether this was just a bug bite or STIs. Although I was worried about my situation, I just decided to wait until I find more STIs-like symptoms before I go to a doctor. A few days later, although I really did not use any medication at all, the acne just went away. Thus, I thought that it was just a bug bite or something. After this experience, there have been no new ones so far and I am good now. Fortunately, my situation seems like that I am free from STIs. This was really good news to me and I was so happy that I did not have STIs. I was really

worried about STIs since I heard that STIs are very common among people in my age. But, it seems that STIs are not as prevalent as it is widely known.
Comment • Share • Thank • Report • 23 Jan

Anonymous Hello, I am a female college student. I met a guy a month ago and I was so anxious if I caught any STIs from him. I was anxious and stressed because I had a tiny flat bump on my lower lip edge after we had the first intercourse. I knew that tiny bumps on my lip could be due to either STIs or stress/fatigue. It didn't really hurt or anything, not even slight itching. It was just a little uncomfortable. I felt like I was being pinched slightly, just a little in the area. So, I was anxious about my situation if I had STIs or just stress/fatigue. Although I am not a health professional, I just decided to rest at home instead of seeing a doctor. First, it was not severe at all and second, I felt that it was caused by fatigue. After resting for two full days, it just went away. I did not see any other bumps or something until today. Because I heard that some STIs are untreatable or it takes a lot of time before the STI is completely cured, I was worried with my bumps at first. But, right now, I'm living in delight and joy without STIs. After this experience, I am far more cautious about using condoms, and now it seems I do not need to worry about my sexual health or STIs. I would like to inform people around here that there are also STIs-like symptoms, which actually are not STIs.
Comment • Share • Thank • Report • 23 Jan

Anonymous Hi, I am a male college student. I recently had unprotected sex (I used a condom, but it slipped off for a brief moment). After that, I noticed acne-like lump on my penile shaft and it became present about a week after the intercourse. This was not huge blemishes or anything like that. Other than this acne, I saw no other symptoms down there (no redness, no irritation, no pain, no burning discharge of any kind, etc). So, I was just getting pretty stressed over the situation whether this was just a bug bite or STIs. Although I was worried about my situation, I just decided to wait until I find more STIs-like symptoms before I go to a doctor. At first, although I really did not use any medication at all, the acne just went away. Thus, I thought that it was just a bug bite or something. But soon afterwards, warts appeared and I have had three treatment of cryotheraphy every two weeks or so. Unfortunately, the situation is just worsening. This is really getting me down and I would be so happy if I could at least see an improvement. I was really worried about STIs since I heard that STIs are very common among people in my age. And, It seems that STIs are very prevalent as it is widely known.
Comment • Share • Thank • Report • 23 Jan

Anonymous Hello, I am a female college student. I met a guy a month ago and I was so anxious if I caught any STIs from him. I was anxious and stressed because I had a tiny flat bump on my lower lip edge after we had the first intercourse. I knew that tiny bumps on my lip could be due to either STIs or stress/fatigue. It didn't really hurt or anything, not even slight itching. It was just a little uncomfortable. I felt like I was being pinched slightly, just a little in the area. So, I was anxious about my situation if I had STIs or just stress/fatigue. Although I am not a health professional, I just decided to rest at home instead of seeing a doctor. First, it was not severe at all and second, I felt that it was caused by fatigue. After resting for two full days, the bump seemed to disappear. However, I had a second outbreak after a month. Because I heard that some STIs are untreatable or it takes a lot of time before the STI is completely cured, I am extremely frustrated and mentally broken. After this experience, I was far more cautious about using condoms, but now it seems the worst case scenario has come true and maybe I just need to vent.

I would like to inform people around here that STIs are very prevalent, severe and painful.
Comment • Share • Thank • Report • 23 Jan

Instructions: The following questions deal with your perceptions of the online support group posts (i.e., others' experiences with STIs) you just read.

Below are statements about your perceptions of credibility and helpfulness of the online support group posts that you just read (i.e., others' experiences with STIs). Please indicate how much each statement applies to you.

	Not At All	...	...	Somewhat	...	...	Extremely
How believable is the source of information you just read?	❍	❍	❍	❍	❍	❍	❍
How accurate is the source of information you just read?	❍	❍	❍	❍	❍	❍	❍
How knowledgeable is the source of information you just read?	❍	❍	❍	❍	❍	❍	❍
How expert is the source of information you just read?	❍	❍	❍	❍	❍	❍	❍
In general, how helpful did you find the information you just read?	❍	❍	❍	❍	❍	❍	❍
For coping with your uncertainty about sexual health status, how helpful did you find the information you just read?	❍	❍	❍	❍	❍	❍	❍
For understanding your sexual health status and the risk of STIs, how helpful did you find the information you just read?	❍	❍	❍	❍	❍	❍	❍

Below are statements about your perception of your similarity and dissimilarity with the situations described in the online support group posts that you just read (i.e., others' experiences with STIs). Please indicate how much each statement applies to you.

	Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree
After reading others' experiences of STIs, I can	❍	❍	❍	❍	❍	❍	❍

think of many similarities between others and me.							
After reading others' experiences of STIs, I think I am very similar to the people that wrote those posts.	❍	❍	❍	❍	❍	❍	❍
After reading others' experiences of STIs, I can think of many dissimilarities between me and others.	❍	❍	❍	❍	❍	❍	❍
After reading others' experiences of STIs, I think I am very different from others.	❍	❍	❍	❍	❍	❍	❍

After thinking about the online support group posts that you just read (i.e., others' experiences with STIs), how will you judge the situations described in the posts in comparison to your current sexual health situation?

❍ The situations described in the posts are better of than my current sexual health situation
❍ The situations described in the posts are similar to my current sexual health situation
❍ The situations described in the posts are worse of than my current sexual health situation

Why do you judge the situations described in the posts are better, similar, or worse than your current sexual health situation?

Below are additional statements about your perceptions of the online support group posts that you just read (i.e., others' experiences with STIs). Please indicate how much each statement applies to you.

	Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree
I realize that I do not need to worry about STIs.	❍	❍	❍	❍	❍	❍	❍
I am pleased that STIs do not pose serious risks to me.	❍	❍	❍	❍	❍	❍	❍
I will not worry about STIs.	❍	❍	❍	❍	❍	❍	❍
It is threatening to notice that I might have STIs.	❍	❍	❍	❍	❍	❍	❍
I feel anxious about my sexual health status.	❍	❍	❍	❍	❍	❍	❍
I feel depressed realizing that my sexual health status can be worse.	❍	❍	❍	❍	❍	❍	❍

I am afraid that my sexual health may decline.	❍	❍	❍	❍	❍	❍	❍
I fear that my sexual health status will be similar to their cases.	❍	❍	❍	❍	❍	❍	❍
I fear that I will go along the same way with their situations.	❍	❍	❍	❍	❍	❍	❍
I am happy that my sexual health status is good.	❍	❍	❍	❍	❍	❍	❍
I feel relieved about my own sexual health status.	❍	❍	❍	❍	❍	❍	❍
I realize how well I am protecting myself from STIs.	❍	❍	❍	❍	❍	❍	❍

The following statements deal with how frequently you compare yourself with others in daily life (e.g., academic achievement, etc.). Please indicate how much each statement applies to you.

	Not At All	...	...	...	...	...	Very frequently
In general, how frequently do you compare yourself to other people's situation regarding a variety of issues?	❍	❍	❍	❍	❍	❍	❍
In general, how often do you compare yourself with others who are performing better than you do?	❍	❍	❍	❍	❍	❍	❍
In general, how often do you compare yourself with others who are performing worse than you do?	❍	❍	❍	❍	❍	❍	❍

The following are additional statements that deal with how you compare yourself with others in daily life. Please indicate how much each statement applies to you.

	Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree
I often compare myself with others with respect to what I	❍	❍	❍	❍	❍	❍	❍

have accomplished in life.							
If I want to learn more about something, I try to find out what others think about it.	❍	❍	❍	❍	❍	❍	❍
I always pay a lot of attention to how I do things compared with how others do things.	❍	❍	❍	❍	❍	❍	❍
I often compare how my loved ones (i.e., boy or girlfriend, family members, etc) are doing with how others are doing.	❍	❍	❍	❍	❍	❍	❍
I always like to know what others in a similar situation would do.	❍	❍	❍	❍	❍	❍	❍
I am not the type of person who compares myself often with others.	❍	❍	❍	❍	❍	❍	❍
If I want to find out how well I have done something, I compare what I have done with how others have completed the same task.	❍	❍	❍	❍	❍	❍	❍
I often try to find out what others think who face similar problems as I face.	❍	❍	❍	❍	❍	❍	❍
I often like to talk with others about mutual opinions and experiences.	❍	❍	❍	❍	❍	❍	❍
I never consider my situation in life relative to that of other people.	❍	❍	❍	❍	❍	❍	❍
I often compare how I am doing socially (e.g., social skills, popularity) with other people.	❍	❍	❍	❍	❍	❍	❍

Instructions: Now that you have read the results of a web search using a search engine (e.g., Google, Bing, Yahoo, etc.) and the online support group posts (i.e., others' experiences with STIs), we would like to ask you again some of the questions we had asked previously. The following questions deal with your information management strategies regarding sexual health information, including STIs. Please answer all questions.

Below are statements about how much uncertainty you feel in regards to your sexual health status. Please indicate how much each statement applies to you.

	Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree
I am certain that I have enough information about my sexual health status.	❍	❍	❍	❍	❍	❍	❍
I want to know more than I currently know about my sexual health status.	❍	❍	❍	❍	❍	❍	❍
I might know less than I'd like to know about my sexual health status.	❍	❍	❍	❍	❍	❍	❍
I wish I knew more about my sexual health status.	❍	❍	❍	❍	❍	❍	❍

Below are statements about how much anxiety you feel from the lack of information about your sexual health status. Please indicate how much each statement applies to you.

	Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree
It worries me to think about how little I know compared to how much I should know about my sexual health status.	❍	❍	❍	❍	❍	❍	❍
It makes me anxious to think about the difference between how much I should know about my sexual health status and how much I actually know.	❍	❍	❍	❍	❍	❍	❍
The difference between how much I know and how much I should know about my sexual health status produce anxiety.	❍	❍	❍	❍	❍	❍	❍

Please rate the degree to which you experience the following emotions when you are uncertain about your sexual health status.

	Not at all	...	...	Somewhat	...	...	Extremely
Frustrated	❍	❍	❍	❍	❍	❍	❍
Sad	❍	❍	❍	❍	❍	❍	❍
Interested	❍	❍	❍	❍	❍	❍	❍
Happy	❍	❍	❍	❍	❍	❍	❍
Upset	❍	❍	❍	❍	❍	❍	❍
Disappointed	❍	❍	❍	❍	❍	❍	❍
Wishful	❍	❍	❍	❍	❍	❍	❍
Excited	❍	❍	❍	❍	❍	❍	❍
Anxious	❍	❍	❍	❍	❍	❍	❍
Worried	❍	❍	❍	❍	❍	❍	❍
Stimulated	❍	❍	❍	❍	❍	❍	❍
Encouraged	❍	❍	❍	❍	❍	❍	❍
Nervous	❍	❍	❍	❍	❍	❍	❍
Calm	❍	❍	❍	❍	❍	❍	❍

Below are statements about how you think about information seeking about your sexual health, including STIs. Please indicate how much each statement applies to you.

	Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree
When I am worried about STIs, the benefits associated with searching other's experiences with STIs are important.	❍	❍	❍	❍	❍	❍	❍
Searching for other's situations (i.e., symptom, treatment, etc.) about their sexual health would have positive outcomes.	❍	❍	❍	❍	❍	❍	❍
There are more benefits than	❍	❍	❍	❍	❍	❍	❍

problems in searching for other's experiences with STIs. Other's experiences with STIs would produce more positives than negatives.	❍	❍	❍	❍	❍	❍	❍

Below are statements about how you think about information seeking in regards to your sexual health, including STIs. Please indicate how much each statement applies to you.

	Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree
I would have no problem with discovering other people's experiences with STIs, whatever they may be.	❍	❍	❍	❍	❍	❍	❍
I can handle whatever I would find out about other's STIs-related experiences.	❍	❍	❍	❍	❍	❍	❍
I would not be able to deal with what I might find out about others' experiences with STIs.	❍	❍	❍	❍	❍	❍	❍

Below are statements about how you think about others who share their experiences about STIs. Please indicate how much each statement applies to you.

	Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree
On the Internet, people could provide me with	❍	❍	❍	❍	❍	❍	❍

information about sexual health or STIs.							
People would be very willing to offer their experiences of STIs in online settings.	❍	❍	❍	❍	❍	❍	❍
People would be very honest about their experiences of STIs in online settings.	❍	❍	❍	❍	❍	❍	❍

Below are statements about how you think about your ability to seek information about your sexual health and STIs. Please indicate how much each statement applies to you.

	Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree
I know how to search and find relevant information about other's STIs-related experiences.	❍	❍	❍	❍	❍	❍	❍
I am able to search for other people's experiences with STIs.	❍	❍	❍	❍	❍	❍	❍
I know what I need to do to successfully search for STI-related information from others' experiences.	❍	❍	❍	❍	❍	❍	❍

Below are statements about how you would like to seek or avoid information about your sexual health, including STIs. Please indicate how much each statement applies to you.

	Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree
I will seek further information about other people's experiences with STIs in order to be informed about my own sexual health.	❍	❍	❍	❍	❍	❍	❍
I will spend more time seeking further information about others' experiences with STIs for my sexual health.	❍	❍	❍	❍	❍	❍	❍
I will avoid seeking further information about other people's experiences with STIs for my sexual health status.	❍	❍	❍	❍	❍	❍	❍
I will avoid spending more time seeking further information about others' experiences with STIs for my sexual health.	❍	❍	❍	❍	❍	❍	❍
I will seek a lot of specific cases of others to compare my sexual health status and their STIs-related experiences.	❍	❍	❍	❍	❍	❍	❍

Instructions: Please answer the following questions about your general information.

What is your age?

Are you male or female?
- ❍ Male
- ❍ Female

Which one of these groups BEST describes you?
- ❍ White, non-Hispanic
- ❍ Black or African American, non-Hispanic
- ❍ Hispanic
- ❍ Asian or Pacific Islander
- ❍ American Indian/Alaska Native
- ❍ Bi- or Multi-racial
- ❍ Other (please specify): _____

What is your current or proposed academic major?

What is the zip code of where you live?

How would you describe the community where you live? Would you say it is a city, a suburban area, a small town, or a rural area?
- ❍ City
- ❍ Suburban area
- ❍ Small town
- ❍ Rural area
- ❍ Other (please specify): _____

If you have to choose, which of the following best describes how you think of your relationship status?
- ❍ Single
- ❍ Engaged or Committed dating relationship
- ❍ Married
- ❍ Married, but separated
- ❍ Divorced
- ❍ Widowed
- ❍ Other (please specify): _____

What was your total annual family income for the last year from all sources?
- ❍ Less than $10,000
- ❍ $10,000 to under $20,000
- ❍ $20,000 to under $30,000
- ❍ $30,000 to under $40,000
- ❍ $40,000 to under $50,000
- ❍ $50,000 to under $75,000
- ❍ $75,000 to under $100,000
- ❍ $100,000 or more
- ❍ Prefer not to answer

Thank you for participating in this survey. To receive your extra credit, please click next (>>) button at the bottom. You will be redirected to SONA system. If you were logged in through SONA and sign up for this study, you should see either a System Message or a notification email that indicates credit has been granted. If you have any questions, please send an email to the principal investigator at jehoon@wayne.edu. Thank you!

REFERENCES

Afifi, W. A. (2010). Uncertainty and information management in interpersonal contexts. In S. Wilson & S. Smith (Eds.), *New directions in interpersonal communication research* (pp. 94-114). Thousand Oaks, CA: Sage.

Afifi, W. A., & Afifi, T. D. (2009). Avoidance among adolescents in conversations about their parents' relationship: Applying the theory of motivated information management. *Journal of Social and Personal Relationships, 26*(4), 488-511.

Afifi, W. A., & Morse, C. (2009). Expanding the role of emotion in the theory of motivated information management. In T. D. Afifi & W. A. Afifi (Eds.), *Uncertainty, information management, and disclosure decisions: Theories and applications* (pp. 87-105). New York, NY: Routledge/Taylor & Francis Group.

Afifi, W. A., & Weiner, J. L. (2004). Toward a theory of motivated information management. *Communication Theory, 14*(2), 167-190.

Afifi, W. A., & Weiner, J. L. (2006). Seeking information about sexual health: Applying the theory of motivated information management. *Human Communication Research, 32*(1), 35-57.

Albrecht, T. L., & Adelman, M. B. (1987). *Communicating social support*. Thousand Oaks, CA: Sage Publications.

Albrecht, T. L., Burleson, B. R., & Sarason, I. (1992). Meaning and method in the study of communication and social support. *Communication Research, 19*(2), 149-153.

Albrecht, T. L., & Goldsmith, D. J. (2003). Social support, social networks, and health. In T. L. Thompson, A. Dorsey, K. I. Miller & R. Parrott (Eds.), *Handbook of health communication* (pp. 263-284). Mahwah, NJ: Lawrence Erlbaum Associates.

Anderson, J. C., & Gerbing, D. W. (1988). Structural equation modeling in practice: A review and recommended two-step approach. *Psychological Bulletin, 103*(3), 411-423.

American College Health Association. (2005). The American College Health Association National College Health Assessment (ACHA-NCHA) Spring 2003 reference group report. *Journal of American College Health, 53*, 199–210.

Arnett, J. J. (2007). *Adolescence and emerging adulthood: A cultural approach* (3rd ed.). Upper Saddle River, NJ: Prentice Hall.

Attard, A., & Coulson, N. S. (2012). A thematic analysis of patient communication in Parkinson's disease online support group discussion forums. *Computers in Human Behavior, 28*(2), 500-506.

Babrow, A. S. (1992). Communication and problematic integration: Understanding diverging probability and value, ambiguity, ambivalence, and impossibility. *Communication Theory, 2*(2), 95-130.

Babrow, A. S. (2001). Uncertainty, value, communication, and problematic integration. *Journal of Communication, 51*(3), 553-573.

Babrow, A. S., Hines, S. C., Kasch, C. R., & Whaley, B. (2000). Managing uncertainty in illness explanation: An application of problematic integration theory. In B. Whaley (Eds.), *Explaining illness: Research, theory, and strategies* (pp. 41-67). Mahwah, NJ: Lawrence Erlbaum Associates.

Babrow, A. S., & Matthias, M. S. (2009). Generally unseen challenges in uncertainty management: An application of problematic integration theory. In T. D. Afifi & W. A. Afifi (Eds.), *Uncertainty, information management, and disclosure decisions: Theories and applications* (pp. 9-25). New York, NY: Routledge/Taylor & Francis Group.

Bader, J. L., & Theofanos, M. F. (2003). Searching for cancer information on the Internet: Analyzing natural language search queries. *Journal of Medical Internet Research, 5*(4), e31.

Bandura, A. (1997). *Self-efficacy: The exercise of control*. New York, NY: Freeman.

Bandura, A. (2007). Much ado over a faulty conception of perceived self-efficacy grounded in faulty experimentation. *Journal of Social and Clinical Psychology, 26*(6), 641-658.

Bandura, A., & Jourden, F. J. (1991). Self-regulatory mechanisms governing the impact of social comparison on complex decision making. *Journal of Personality and Social Psychology, 60*(6), 941-951.

Barrera, M. (1981). Social support in the adjustment of pregnant adolescents: Assessment issues. *Social Networks and Social Support, 4*, 69-96.

Barrera, M. (1986). Distinctions between social support concepts, measures, and models. *American Journal of Community psychology, 14*(4), 413-445.

Bauermeister, J. A., Giguere, R., Carballo-Di éguez, A., Ventuneac, A., & Eisenberg, A. (2010). Perceived risks and protective strategies employed by young men who have sex with men (YMSM) when seeking online sexual partners. *Journal of Health Communication, 15*(6), 679-690.

Bentler, P. M. (1990). Comparative fit indexes in structural models. *Psychological Bulletin, 107*(2), 238-246.

Bentler, P. M. (1990). Fit indexes, Lagrange multipliers, constraint changes and incomplete data in structural models. *Multivariate Behavioral Research, 25*(2), 163-172.

Berger, C. R., & Calabrese, R. J. (1975). Some explorations in initial interaction and beyond: Toward a developmental theory of interpersonal communication. *Human Communication Research, 1,* 99-112.

Berkman, L. F., & Syme, S. L. (1979). Social networks, host resistance, and mortality: A nine-year follow-up study of Alameda County residents. *American Journal of Epidemiology, 109*(2), 186-204.

Berland, G. K., Elliott, M. N., Morales, L. S., Algazy, J. I., Kravitz, R. L., Broder, M. S., et al. (2001). Health information on the Internet. *JAMA: The Journal of the American Medical Association, 285*(20), 2612-2621.

Blanton, H., & Stapel, D. A. (2008). Unconscious and spontaneous and ... complex: The three selves model of social comparison assimilation and contrast. *Journal of Personality and Social Psychology, 94*(6), 1018-1032.

Braithwaite, D. O., Waldron, V. R., & Finn, J. (1999). Communication of social support in computer-mediated groups for people with disabilities. *Health Communication, 11*(2), 123-151.

Brashers, D. E. (2001). Communication and uncertainty management. *Journal of Communication, 51*, 477-497.

Brashers, D. E., Goldsmith, D. J., & Hsieh, E. (2002). Information seeking and avoiding in health contexts. *Human Communication Research, 28*(2), 258-271.

Brickman, P., & Bulman, R. J. (1977). Pleasure and pain in social comparison. In J. Suls & R. L. Miler (Eds.), *Social comparison processes: Theoretical and empirical perspectives* (pp. 149-186). Washington, D.C.: Hemisphere.

Brissette, I., Cohen, S., & Seeman, T. E. (2000). Measuring social integration and social networks. In S. Cohen, L. G. Underwood, & B. H. Gottlieb (Eds.), *Social support measurement and intervention: A guide for health and social scientists* (pp. 53-85). New York, NY: Oxford University Press

Broom, A. (2005). Virtually healthy: The impact of Internet use on disease experience and the doctor-patient relationship. *Qualitative Health Research, 15*(3), 325-345.

Broom, A. (2005). Medical specialists' accounts of the impact of the Internet on the doctor/patient relationship. *Health: An Interdisciplinary Journal for the Social Study of Health, Illness and Medicine, 9*(3), 319-338.

Buhi, E. R., Daley, E. M., Fuhrmann, H. J., & Smith, S. A. (2009). An observational study of how young people search for online sexual health information. *Journal of American College Health, 58*(2), 101-111.

Bunde, M., Suls, J., Martin, R., & Barnett, K. (2006). Hystersisters online: Social support and social comparison among hysterectomy patients on the Internet. *Annals of Behavioral Medicine, 31*(3), 271-278.

Burleson, B. R., & MacGeorge, E. L. (2002). Supportive communication. In M. L. Knapp & J. A. Daly (Eds.), *Handbook of interpersonal communication* (Vol. 3, pp. 374-422). Thousand Oaks, CA: Sage.

Buunk, B. P., Collins, R. L., Taylor, S. E., Van Yperen, N. W., & Dakof, G.A. (1990). The affective consequences of social comparison: Either direction has its ups and downs. *Journal of Personality and Social Psychology, 59*, 1238-1249.

Buunk, B. P., & Gibbons, F. X. (2000). Toward an enlightenment in social comparison theory: Moving beyond classic and Renaissance approaches. In J. Suls & L. Wheeler

(Eds.), *Handbook of social comparison: Theory and research* (pp. 487-499). Dordrecht, Netherlands: Kluwer Academic Publishers.

Buunk, B. P., Kuyper, H., & Van der Zee, Y. G. (2005). Affective response to social comparison in the classroom. *Basic and Applied Social Psychology, 27*(3), 229-237.

Buunk, B. P., & Mussweiler, T. (2001). New directions in social comparison research. *European Journal of Social Psychology, 31*(5), 467-475.

Buunk, B. P., & Ybema, J. F. (1995). Selective evaluation and coping with stress: Making one's situation cognitively more livable. *Journal of Applied Social Psychology, 25*(17), 1499-1517.

Buunk, B. P., & Ybema, J. F. (1997). Social comparisons and occupational stress: The identification-contrast model. In G. F. Buunk BP (Eds.), *Health, Coping and Well-being: Perspectives from Social Comparison Theory*. Hillsdale, NJ: Erlbaum.

Buunk, A. P., Zurriaga, R., & Gonz áez, P. (2006). Social comparison, coping and depression in people with spinal cord injury. *Psychology and Health, 21*(6), 791-807.

Cacioppo, J. T., Berntson, G. G., Sheridan, J. F., & McClintock, M. K. (2000). Multilevel integrative analyses of human behavior: Social neuroscience and the complementing nature of social and biological approaches. *Psychological Bulletin, 126*(6), 829-843.

Callaghan, P., & Morrissey, J. (2008). Social support and health: A review. *Journal of Advanced Nursing, 18*(2), 203-210.

Campbell, H. S., Phaneuf, M. R., & Deane, K. (2004). Cancer peer support programs - do they work? *Patient Education and Counseling, 55*(1), 3-15.

Case, D. O., Andrews, J. E., Johnson, J. D., & Allard, S. L. (2005). Avoiding versus seeking: The relationship of information seeking to avoidance, blunting, coping, dissonance, and related concepts. *Journal of the Medical Library Association, 93*(3), 353-362.

Centers for Disease Control and Prevention [CDC]. (2010). *Data & statistics. Sexually Transmitted Diseases (STDs)*. Retrieved from http://www.cdc.gov/sTD/stats/default.htm.

Centers for Disease Control and Prevention [CDC]. (2011). *STD trends in the United States: 2010 national data for gonorrhea, chlamydia, and syphilis. 2010 Sexually Transmitted Diseases Surveillance*. Retrieved from http://www.cdc.gov/std/stats10/trends.htm.

Centers for Disease Control and Prevention [CDC]. (2012). *STDs in adolescents and young adults. 2011 Sexually Transmitted Diseases Surveillance Report*. Retrieved from http://www.cdc.gov/std/stats11/adol.htm.

Centers for Disease Control and Prevention [CDC]. (2013). *Sexually Transmitted Diseases (STDs)*. Retrieved from http://www.cdc.gov/STD.

Chapin, J. (2001). It won't happen to me: The role of optimistic bias in African American teens' risky sexual practices. *Howard Journal of Communication, 12*(1), 49-59.

Chatman, E. A. (2000). Framing social life in theory and research. *The New Review of Information Behaviour Research, 1*(December), 3-17.

Cline, R. J., & Haynes, K. M. (2001). Consumer health information seeking on the Internet: The state of the art. *Health Education Research, 16*(6), 671-692.

Cobb, S. (1976). Presidential Address-1976. Social support as a moderator of life stress. *Psychosomatic Medicine, 38*(5), 300-314.

Cohen, S. & Wills, T. A. (1985). Stress, social support, and the buffering hypothesis. *Psychological Bulletin, 98*(2), 310-357.

Coleman, J. S. (1988). Social capital in the creation of human capital. *American Journal of Sociology, 94*(Supplement), 95-120.

Collins, R. L. (1996). For better or worse: The impact of upward social comparison on self-evaluations. *Psychological Bulletin, 119*(1), 51-69.

Corcoran, K., Crusius, J., & Mussweiler, T. (2011). Social comparison: Motives, standards, and mechanisms. In D. Chadee (Eds.), *Theories in social psychology* (pp. 119-139). Oxford, UK: Wiley-Blackwell.

Cousins, N. (1977). *Anatomy of an illness as perceived by the patient*. New York, NY: Norton & Company

Cutrona, C. E., & Russell, D. W. (1990). Type of social support and specific stress: Toward a theory of optimal matching. In B. R. Sarason, I. G. Sarason & G. R. Pierce (Eds.), *Social support: An interactional view. Wiley series on personality processes* (pp. 319-366). Oxford, UK: John Wiley & Sons.

Davis, C., Sloan, M., MacMaster, S., & Kilbourne, B. (2007). HIV/AIDS knowledge and sexual activity: An examination of racial differences in a college sample. *Health & Social Work, 32*(3), 211-218.

Demiris, G. (2006). The diffusion of virtual communities in health care: Concepts and challenges. *Patient Education and Counseling, 62*(2), 178-188.

DeVellis, R. F., Blalock, S. J., Holt, K., Renner, B. R., Blanchard, L. W., & Klotz, M. L. (1991). Arthritis patients' reactions to unavoidable social comparisons. *Personality and Social Psychology Bulletin, 17*(4), 392-399.

Diaz, J. A., Griffith, R. A., Ng, J. J., Reinert, S. E., Friedmann, P. D., & Moulton, A. W. (2002). Patients' use of the Internet for medical information. *Journal of General Internal Medicine, 17*(3), 180-185.

Epstude, K., & Mussweiler, T. (2009). What you feel is how you compare: How comparisons influence the social induction of affect. *Emotion, 9*(1), 1-14.

Eysenbach, G., & Köhler, C. (2002). How do consumers search for and appraise health information on the world wide web? Qualitative study using focus groups, usability tests, and in-depth interviews. *BMJ: British Medical Journal, 324*(7337), 573-577.

Festinger, L. (1954). A theory of social comparison processes. *Human Relations, 7*(2), 117-140.

Finn, J. (1995). Computer-based self-help groups: A new resource to supplement support groups. *Social Work with Groups, 18*(1), 109-117.

Fowler, C., & Afifi, W. A. (2011). Applying the Theory of Motivated Information Management to adult children's discussions of caregiving with aging parents. *Journal of Social and Personal Relationships, 28*(4), 507-535.

Fox, S., & Raine, L. (2002). *Vital decisions: How Internet users decide what information to trust when they or their loved ones are sick. Plus a guide from the Medical Library Association about smart health search strategies and good web sites*. Retrieved from http://www.pewinternet.org/~/media//Files/Reports/2007/EPatients_Chronic_Conditions_2007.pdf.

Fox, S., & Duggan, M. (2013). *Health online 2013.* Retrieved from http://www.pewinternet.org/2013/01/15/health-online-2013/.

Fox, S., & Duggan, M. (2013). *Information triage.* Retrieved from http://www.pewinternet.org/2013/01/15/information-triage/.

Freimuth, V. S., Stein, J. A., & Kean, T. J. (1989). *Searching for health information: The cancer information service model*. University of Pennsylvania Press.

Frost, J. H., & Massagli, M. P. (2008). Social uses of personal health information within PatientsLikeMe, an online patient community: What can happen when patients have access to one another's data. *Journal of Medical Internet Research, 10*(3), e15.

Gardner, W. L., Gabriel, S., & Hochschild, L. (2002). When you and I are" we," you are not threatening: The role of self-expansion in social comparison. *Journal of Personality and Social Psychology, 82*(2), 239-251.

Gibbons, F. X. (1985). Social stigma perception: Social comparison among mentally retarded persons. *American Journal of Mental Deficiency, 90*, 98-106.

Gibbons, F. X., & Buunk, B. P. (1999). Individual differences in social comparison: development of a scale of social comparison orientation. *Journal of Personality and Social Psychology*, *76*(1), 129-142.

Gibbons, F. X., Gerrard, M., Lando, H. A., & McGovern, P. G. (1991). Social comparison and smoking cessation: The role of the "typical smoker." *Journal of Experimental Social Psychology, 27*(3), 239-258.

Gilbert, D. T., Giesler, R. B., & Morris, K. A. (1995). When comparisons arise. *Journal of Personality and Social Psychology, 69*(2), 227-236.

Goethals, G. R., & Darley, J. M. (1977). Social comparison theory: An attributional approach. In J. M. Suls & R. L. Miler (Eds.), *Social comparison processes: Theoretical and empirical perspectives* (pp. 259-278). Washington, D.C.: Hemisphere.

Goldsmith, D. J. (2004). *Communicating social support*. New York, NY: Cambridge University Press.

Hakmiller, K. L. (1966). Threat as a determinant of downward comparison. *Journal of Experimental Social Psychology, 2(Suppl. 1)*, 32-39.

Hansen, D. L., Derry, H. A., Resnick, P. J., & Richardson, C. R. (2003). Adolescents searching for health information on the Internet: An observational study. *Journal of Medical Internet Research, 5*(4).

Helgeson, V. S., & Cohen, S. (1996). Social support and adjustment to cancer: Reconciling descriptive, correlational, and intervention research. *Health Psychology, 15*(2), 135-148.

Helgeson, V. S., & Taylor, S. E. (1993). Social comparisons and adjustment among cardiac patients. *Journal of Applied Social Psychology, 23*(15), 1171-1195.

Hildingh, C., Fridlund, B., & Segesten, K. (1995). Social support in self-help groups, as experienced by persons having coronary heart disease and their next of kin. *International Journal of Nursing Studies, 32*(3), 224-232.

Holland, K. J., & French, S. E. (2012). Condom negotiation strategy use and effectiveness among college students. *Journal of Sex Research, 49*(5), 443-453.

Horrigan, J. B., & Rainie, L. (2002). *Getting Serious Online*. Retrieved December 4, 2012, from http://www.eric.ed.gov.proxy.lib.wayne.edu/ERICWebPortal/search/detailmini.jsp?_nfpb=true&_&ERICExtSearch_SearchValue_0=ED462978&ERICExtSearch_SearchType_0=no&accno=ED462978.

Hou, S. I. (2009). HIV-related behaviors among black students attending Historically Black Colleges and Universities (HBCUs) versus white students attending a Traditionally White Institution (TWI). *AIDS Care, 21*(8), 1050-1057.

Hovick, S. R. (2013). Understanding family health information seeking: A test of the theory of motivated information management. *Journal of Health Communication, 19*, 6-23.

Hu, L., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling: A Multidisciplinary Journal, 6*(1), 1-55.

Jessop, A. B., Cohen, C., Burke, M. M., Conti, M., & Black, M. (2004). Hepatitis support groups: Meeting the information and support needs of hepatitis patients. *Gastroenterology Nursing, 27*(4), 163-169.

Johnsen, T. E. (2003). Social context of mobile phone use of Norwegian teens. In J. E. Katz (Eds.), *Machines that become us: The social context of communication technology* (pp. 161-170). New Brunswick, NJ: Transaction Publishers.

Johnson, D., & Meischke, H. (1993). Cancer-related channel selection. *Women & Health, 20*(2), 31-44.

Johnson, J. D., Case, D. O., Andrews, J. E., & Allard, S. L. (2005). Genomics - The perfect information-seeking research problem. *Journal of Health Communication, 10*(4), 323-329.

Johnson, J. D., & Meischke, H. (2006). A comprehensive model of cancer-related information seeking applied to magazines. *Human Communication Research, 19*(3), 343-367.

Jones, R. K., & Biddlecom, A. E. (2011). Is the Internet filling the sexual health information gap for teens? An exploratory study. *Journal of Health Communication, 16*(2), 112-123.

Kanekar, A., & Sharma, M. . (2010). Interventions for safer sex behaviors among college students. *American Journal of Health Studies, 25*(3), 138-148.

Katz, J. E., & Rice, R. E. (2002). *Social consequences of Internet use: Access, involvement, and interaction*. Cambridge, MA: MIT Press.

Keller, S. N., Labelle, H., Karimi, N., & Gupta, S. (2002). STD/HIV prevention for teenagers: A look at the Internet universe. *Journal of Health Communication, 7*(4), 341-353.

Klein, W. M. (1997). Objective standards are not enough: Affective, self-evaluative, and behavioral responses to social comparison information. *Journal of Personality and Social Psychology, 72*(4), 763-774.

Kline, R. B. (2011). *Principles and practice of structural equation modeling*. New York, NY: The Guilford Press.

Kulik, J. A., & Mahler, H. I. (2000). Social comparison, affiliation, and emotional contagion under threat *Handbook of social comparison: Theory and research. The Plenum series in social/clinical psychology*. (pp. 295-320). New York, NY: Kluwer Academic Publishers.

Lakey, B., & Cohen, S. (2000). Social support theory and measurement. In S. Cohen, L. G. Underwood & B. H. Gottlieb (Eds.), *Social support measurement and intervention: A guide for health and social scientists* (pp. 29-52). London, UK: Oxford University Press.

Lea, M., & Spears, R. (1992). Paralanguage and social perception in computer- mediated communication. *Journal of Organizational Computing and Electronic Commerce, 2*(3), 321-341.

Lehman, D. R., Ellard, J. H., & Wortman, C. B. (1986). Social support for the bereaved: Recipients' and providers' perspectives on what is helpful. *Journal of Consulting and Clinical Psychology, 54*(4), 438-446.

Lewis, J. E., Miguez-Burbano, M. J., & Malow, R. M. (2009). HIV risk behavior among college students in the United States. *College Student Journal, 43*(2), 475-491.

Liu, L. L., & Gonzalez, R. (2007). Judgment and decision processes in older adults' compliance with medical regimens. In D. C. Park & L. L. Liu (Eds.), *Medical adherence and aging:*

Social and cognitive perspectives (pp. 201-232). Washington, D.C.: American Psychological Association.

Lockwood, P., & Kunda, Z. (1997). Superstars and me: Predicting the impact of role models on the self. *Journal of Personality and Social Psychology, 73*(1), 91-103.

Madden, M., & Rainie, L. (2003). *America's online pursuits: The changing picture of who's online and what they do. Pew Internet & American Life Project*. Retrieved from: http://www.pewinternet.org/2003/12/22/americas-online-pursuits.

Magdol, L., & Bessel, D. R. (2003). Social capital, social currency, and portable assets: The impact of residential mobility on exchanges of social support. *Personal Relationships, 10*(2), 149-170.

Manago, A. M., Taylor, T., & Greenfield, P. M. (2012). Me and my 400 friends: The anatomy of college students' Facebook networks, their communication patterns, and well-being. *Developmental psychology, 48*(2), 369-380.

Miller, S. M., Fang, C. Y., Diefenbach, M. A., & Bales, C. B. (2001). Tailoring psychosocial interventions to the individual's health information-processing style: The influence of monitoring versus blunting in cancer risk and disease. In A. Baum & B. L. Andersen (Eds.), *Psychosocial interventions for cancer* (pp. 343–362). Washington , D.C.: American Psychological Association.

Mishel, M. H. (1988). Uncertainty in illness. *Journal of Nursing Scholarship, 20*(4), 225-232.

Mishel, M. H., & Clayton, M. F. (2003). Uncertainty in illness theories. In M. J. Smith & P. Liehr (Eds.), *Middle range theory in advanced practice nursing* (pp. 25-48). New York, NY: Springer.

Molleman, E., Pruyn, J., & Knippenberg, A. (1986). Social comparison processes among cancer patients. *British Journal of Social Psychology, 25*(1), 1-13.

Morahan-Martin, J. M. (2004). How Internet users find, evaluate, and use online health information: A cross-cultural review. *Cyber Psychology & Behavior, 7*(5), 497-510.

Morrison, E. W. (2006). Information seeking within organizations. *Human Communication Research, 28*(2), 229-242.

Moss, G. E. (1973). *Illness, immunity, and social interaction: The dynamics of biosocial resonation*. New York, NY: Wiley Interscience.

Moyer-Gusé, E. (2010). Preference for television programs about sexual risk: The role of program genre and perceived message intent. *Media Psychology, 13*(2), 180-199.

Mussweiler, T. (2003). Comparison processes in social judgment: Mechanisms and consequences. *Psychological Review, 110*(3), 472-489.

Mussweiler, T. (2003). 'Everything is relative': Comparison processes in social judgment. The 2002 Jaspars Lecture. *European Journal of Social Psychology, 33*(6), 719-733.

Mussweiler, T., & Bodenhausen, G. V. (2002). I know you are, but what am I? Self-evaluative consequences of judging in-group and out-group members. *Journal of Personality and Social Psychology, 82*(1), 19-32.

Mussweiler, T., & Epstude, K. (2009). Relatively fast! Efficiency advantages of comparative thinking. *Journal of Experimental Psychology: General, 138*(1), 1-21.

Mussweiler, T., & Rüter, K. (2003). What friends are for! The use of routine standards in social comparison. *Journal of Personality and Social Psychology, 85*(3), 467-481.

Mussweiler, T., Rüter, K., & Epstude, K. (2004). The ups and downs of social comparison: Mechanisms of assimilation and contrast. *Journal of Personality and Social Psychology, 87*(6), 832-844.

Mussweiler, T., & Strack, F. (2000). Numeric judgments under uncertainty: The role of knowledge in anchoring. *Journal of Experimental Social Psychology, 36*(5), 495-518.

Nambisan, P. (2011). Information seeking and social support in online health communities: Impact on patients' perceived empathy. *Journal of the American Medical Informatics Association, 18*(3), 298-304.

Nettleton, S., Burrows, R., O'Malley, L., & Watt, I. (2004). Health E-types? *Information, Communication & Society, 7*(4), 531-553.

Oh, H., Ozkaya, E., & LaRose, R. (2014). How does online social networking enhance life satisfaction? The relationships among online supportive interaction, affect, perceived social support, sense of community, and life satisfaction. *Computers in Human Behavior, 30*, 69-78.

Overberg, R. I., Alpay, L. L., Verhoef, J., & Zwetsloot-Schonk, J. H. M. (2007). Illness stories on the internet: What do breast cancer patients want at the end of treatment? *Psycho-Oncology, 16*(10), 937-944.

Page, R. M., Hammermeister, J. J., & Scanlan, A. (2000). Everybody's not doing it: Misperceptions of college students' sexual activity. *American Journal of Health Behavior, 24*(5), 387-394.

Patel, D. A., Zochowski, M., Peterman, S., Dempsey, A. F., Ernst, S., & Dalton, V. K. (2012). Human papillomavirus vaccine intent and uptake among female college students. *Journal of American College Health, 60*(2), 151-161.

Peterson, G., Aslani, P., & Williams, K. A. (2003). How do consumers search for and appraise information on medicines on the Internet? A qualitative study using focus groups. *Journal of Medical Internet Research, 5*(4), e33.

Pew Internet Research Institute. *A decade of adoption: How the Internet has woven itself into American life.* Retrieved from http://www.pewinternet.org/pdfs/internet_status_2005.pdf.

Putnam, R. D. (2000). *Bowling alone: The collapse and revival of American community*. New York, NY: Simon and Schuster Paperbacks.

Rains, S. A. (2008). Seeking health information in the information age: The role of Internet self-efficacy. *Western Journal of Communication, 72*(1), 1-18.

Reinisch, J. M., Hill, C. A., Sanders, S. A., & Ziemba-Davis, M. (1995). High-risk sexual behavior at a midwestern university: A confirmatory survey. *Family Planning Perspectives*, 79-82.

Rice, R. E. (2003). The Internet and health communication: An Overview of issues and research. In L. L. P. Lee, & C. So (Eds.), *Impact and issues in new media: Toward intelligent societies* (pp. 173-204). Cresskill, NJ: Hampton Press.

Rice, R. E. (2006). Influences, usage, and outcomes of Internet health information searching: Multivariate results from the Pew surveys. *International Journal of Medical Informatics, 75*(1), 8-28.

Rideout, V. J. (2001). *Generation Rx. com: How young people use the Internet for health information*. Menlo Park, CA: Henry J. Kaiser Family Foundation.

Rietmeijer, C. A., Bull, S. S., McFarlane, M., Patnaik, J. L., & Douglas, J. M. (2003). Risks and benefits of the Internet for populations at risk for sexually transmitted infections (STIs): Results of an STI clinic survey. *Sexually Transmitted Diseases, 30*(1), 15-19.

Robinson, J. D., & Turner, J. (2003). Impersonal, interpersonal, and hyperpersonal social support: Cancer and older adults. *Health Communication, 15*(2), 227-234.

Salovey, P., Rothman, A. J., & Rodin, J. (1998). Health behavior. In D. T. Gilbert, S. T. Fiske & G. Lindzey (Eds.), *The handbook of social psychology* (4th ed., Vol. 2, pp. 633-683). Boston: McGraw-Hill.

Sarason, I. G., Sarason, B. R., & Shearin, E. N. (1986). Social support as an individual difference variable: Its stability, origins, and relational aspects. *Journal of Personality and Social Psychology, 50*(4), 845-855.

Seta, J. J. (1982). The impact of comparison processes on coactors' task performance. *Journal of Personality and Social Psychology, 42*(2), 281-291.

Shaw, B. R., Hawkins, R., McTavish, F., Pingree, S., & Gustafson, D. H. (2006). Effects of insightful disclosure within computer mediated support groups on women with breast cancer. *Health Communication, 19*(2), 133-142.

Shaw, B. R., McTavish, F., Hawkins, R., Gustafson, D. H., & Pingree, S. (2000). Experiences of women with breast cancer: exchanging social support over the CHESS computer network. *Journal of Health Communication, 5*(2), 135-159.

Skinner, H., Biscope, S., Poland, B., & Goldberg, E. (2003). How adolescents use technology for health information: Implications for health professionals from focus group studies. *Journal of Medical Internet Research, 5*(4).

Smith, W. P., & Arnkelsson, G. B. (2000). Stability of related attributes and the inference of ability through social comparison. In J. Suls & L. Wheeler (Eds.), *Handbook of social comparison: Theory and research* (pp. 45-66). New York, NY: Plenum.

Spencer, S. J., Fein, S., & Lomore, C. D. (2001). Maintaining one's self-image vis-a-vis others: The role of self-affirmation in the social evaluation of the self. *Motivation and Emotion, 25*(1), 41-65.

Stapel, D. A., & Koomen, W. (2001). I, we, and the effects of others on me: How self-construal level moderates social comparison effects. *Journal of Personality and Social Psychology, 80*(5), 766-781.

Stapel, D. A., & Koomen, W. (2005). Competition, cooperation, and the effects of others on me. *Journal of Personality and Social Psychology, 88*(6), 1029-1038.

Stapel, D. A., Koomen, W., & Van der Pligt, J. (1997). Categories of category accessibility: The impact of trait versus exemplar priming on person judgments. *Journal of Experimental Social Psychology, 33*(1), 44-76.

Steiger, J. H. (1990). Structural model evaluation and modification: An interval estimation approach. *Multivariate Behavioral Research, 25*(2), 173-180.

Stroebe, W., & Stroebe, M. (1996). The social psychology of social support. In E. T. Higgins & A. W. Kruglanski (Eds.), *Social psychology: Handbook of basic principles* (pp. 1241-1249). Guilford, NY: Guilford Press.

Suls, J. (2011). Social comparison processes: Implications for physical health. In H. S. Friedman (Eds.), *The Oxford Handbook of Health Psychology*. New York, NY: Oxford University Press.

Suls, J., Marco, C. A., & Tobin, S. (1991). The role of temporal comparison, social comparison, and direct appraisal in the elderly's self- evaluations of health. *Journal of Applied Social Psychology, 21*(14), 1125-1144.

Suls, J., Martin, R., & Wheeler, L. (2002). Social comparison: Why, with whom, and with what effect? *Current Directions in Psychological Science, 11*(5), 159-163.

Suls, J., & Wheeler, L. (2000). A selective history of classic and neo-social comparison theory. In J. Suls & L. Wheeler (Eds.), *Handbook of social comparison: Theory and research* (pp. 3-22). New York, NY: Kluwer Academic. Plenum Press.

Surowiecki, J. (2004). *The Wisdom of crowds: Why the many are smarter than the few and how collective wisdom shapes business, economies, societies and nations*. New York: Random House.

Tanis, M., Das, E., & Fortgens-Sillmann, M. (2009, May). *Who gives care to the caregiver: Effects of online social support groups on wellbeing of people taking care of others?* Paper presented at the International Communication Association convention.

Taylor, S. E. (1981). The interface of cognitive and social psychology. In J. Harvey (Eds.), *Cognition, social behavior, and the environment* (pp. 189-211). Hillsdale, NJ: Erlbaum.

Taylor, S. E., Buunk, B. P., & Aspinwall, L. G. (1990). Social comparison, stress, and coping. *Personality and Social Psychology Bulletin, 16*(1), 74-89.

Taylor, S. E., & Lobel, M. (1989). Social comparison activity under threat: Downward evaluation and upward contacts. *Psychological Review, 96*(4), 569-575.

Taylor, S. E., Wayment, H. A., & Carrillo, M. (1996). Social comparison, self-regulation, and motivation. In R. M. Sorrentino & E. T. Higgins (Eds.), *Handbook of motivation and cognition* (pp. 3-27). New York, NY: Guilford Press.

Taylor, S. E., Wood, J. V., & Lichtman, R. R. (1983). It could be worse: Selective evaluation as a response to victimization. *Journal of Social Issues, 39*(2), 19-40.

Tennen, H., McKee, T. E., & Affleck, G. (2000). Social comparison processes in health and illness. In L. W. J. Suls (Eds.), *Handbook of social comparison: Theory and research* (pp. 443-483). NewYork, NY: Kluwer Academic/Plenum Publishers.

Thoits, P. A. (1995). Stress, coping, and social support processes: Where are we? What next? *Journal of Health and Social Behavior, Extra Issue*, 53-79.

Till, J. E. (2003). Evaluation of support groups for women with breast cancer: Importance of the navigator role. *Health and Quality of Life Outcomes, 1*(1), 16-21.

Tokunaga, R. S., & Gustafson, A. (2014). Seeking interpersonal information over the Internet: An application of the theory of motivated information management to Internet use. *Journal of Social and Personal Relationships,* Advance online publication. doi: 10.1177/0265407513516890.

Trampe, D., Stapel, D. A., & Siero, F. W. (2007). On models and vases: Body dissatisfaction and proneness to social comparison effects. *Journal of Personality and Social Psychology, 92*(1), 106-118.

Uchino, B. N. (2009). Understanding the links between social support and physical health: A life-span perspective with emphasis on the separability of perceived and received support. *Perspectives on Psychological Science, 4*(3), 236-255.

Uchino, B. N., Cacioppo, J. T., & Kiecolt-Glaser, J. K. (1996). The relationship between social support and physiological processes: A review with emphasis on underlying mechanisms and implications for health. *Psychological Bulletin, 119*(3), 488-531.

Van der Zee, K., Buunk, B., Sanderman, R., Botke, G., & Van den Bergh, F. (2000). Social comparison and coping with cancer treatment. *Personality and Individual Differences, 28*(1), 17-34.

Van der Zee, K. I., Buunk, B. P., de Ruiter, J. H., Tempelaar, R., van Sonderen, E., & Sanderman, R. (1996). Social comparison and the subjective well-being of cancer patients. *Basic and Applied Social Psychology, 18*(4), 453-468.

Walther, J. B. (1996). Computer-mediated communication impersonal, interpersonal, and hyperpersonal interaction. *Communication Research, 23*(1), 3-43.

Walther, J. B., & Boyd, S. (2002). Attraction to computer-mediated social support. In C. A. Lin & D. Atkin (Eds.), *Communication Technology and Society: Audience Adoption and Uses* (pp. 153-188). Cresskill, NJ: Hampton Press.

Wang, Z., Walther, J. B., Pingree, S., & Hawkins, R. P. (2008). Health information, credibility, homophily, and influence via the Internet: Web sites versus discussion groups. *Health Communication, 23*(4), 358-368.

Weinberg, M. S., Lottes, I. L., & Shaver, F. M. (1995). Swedish or American heterosexual college youth: Who is more permissive? *Archives of Sexual Behavior, 24*(4), 409-437.

Weinstock, H., Berman, S., & Cates, W. (2004). Sexually transmitted diseases among American youth: Incidence and prevalence estimates, 2000. *Perspectives on Sexual and Reproductive Health, 36*(1), 6-10.

Wheeler, L. (1966). Motivation as a determinant of upward comparison. *Journal of Experimental Social Psychology, 2(Supplement 1),* 27-31.

Wildsmith, E., Schelar, E., Peterson, K., & Manlove, J. (2010). *Sexually transmitted diseases among young adults: Prevalence, perceived risk, and risk-taking behaviors*. Washington, D.C.: Child Trends.

Wills, T. A. (1981). Downward comparison principles in social psychology. *Psychological Bulletin, 90*(2), 245-271.

Wills, T. A., & Shinar, O. (2000). Measuring perceived and received social support. In S. Cohen, L. G. Underwood & B. H. Gottlieb (Eds.), *Social support measurement and intervention: A guide for health and social scientists* (pp. 86-135). London, UK: Oxford University Press.

Wilson, S. R., & Benner, L. A. (1971). The effects of self-esteem and situation upon comparison choices during ability evaluation. *Sociometry*, 381-397.

Winzelberg, A. J., Classen, C., & Alpers, G. W. (2003). Evaluation of an Internet support group for women with primary breast cancer. *Cancer, 97*, 1164-1173.

Wise, M., Han, J. Y., Shaw, B., McTavish, F., & Gustafson, D. H. (2008). Effects of using online narrative and didactic information on healthcare participation for breast cancer patients. *Patient Education and Counseling, 70*(3), 348-356.

Wood, J. V., Taylor, S. E., & Lichtman, R. R. (1985). Social comparison in adjustment to breast cancer. *Journal of Personality and Social Psychology, 49*(5), 1169-1183.

Wright, K. (2002). Social support within an on-line cancer community: An assessment of emotional support, perceptions of advantages and disadvantages, and motives for using the community from a communication perspective. *Journal of Applied Communication Research, 30*(3), 195-209.

Wright, K. B., & Bell, S. B. (2003). Health-related support groups on the Internet: Linking empirical findings to social support and computer-mediated communication theory. *Journal of Health Psychology, 8*(1), 39-54.

Wrightsman Jr, L. S. (1960). Effects of waiting with others on changes in level of felt anxiety. *The Journal of Abnormal and Social Psychology, 61*(2), 216-222.

Xu, Y., & Burleson, B. R. (2006). Effects of sex, culture, and support type on perceptions of spousal social support: An assessment of the "support gap" hypothesis in early marriage. *Human Communication Research, 27*(4), 535-566.

Ybema, J. F., & Buunk, B. P. (1995). Affective responses to social comparison: A study among disabled individuals. *British Journal of Social Psychology, 34*(3), 279-292.

Zrebiec, J., & Jacobson, A. (2001). What attracts patients with diabetes to an internet support group? A 21 month longitudinal website study. *Diabetic Medicine, 18*(2), 154-158.

ABSTRACT

SOCIAL COMPARISON AND INFORMATION SEEKING: COLLEGE STUDENTS' SEXUAL HEALTH INFORMATION MANAGEMENT IN THE CONTEXT OF ONLINE SUPPORT GROUPS

by

JEHOON JEON

August 2014

Advisor: Dr. Pradeep Sopory

Major: Communication

Degree: Doctor of Philosophy

Considering that information seekers often search and pay attention to others' stories and narratives about their health issues, the purpose of this dissertation is to investigate college students' information seeking process with regards to sexual health information in online support groups. More specifically, this dissertation examines the cognitive procedures related to how active information seekers utilize user-created messages shared in online support groups to manage their uncertainty about sexual health, and how social comparisons to others influence their information management strategies. A web-based experimental survey was conducted. The findings of this dissertation mark a meaningful step toward refining and advancing the TMIM framework: First, this study confirms that TMIM is an effective theoretical tool to explain the information management process in the context of college students' management of information about sexual health in online settings. Second, this dissertation extends the TMIM framework as a cyclical process over two phases and examines how the interpretation of social comparison information influence cognitive re-assessments in the subsequent information management process. Third, information users prefer to seek further and detailed information from downward

comparison targets, and efficacy predicts this tendency. Fourth, this study highlights that the importance of efficacy in predicting information seeking seemed to be limited to the initial information management process, and information users do not repeatedly evaluate efficacy in their continuous search for the user-created messages shared in online support groups. The theoretical contribution is presented along with the discussions of practical implications and suggestions for future research.

AUTOBIOGRAPHICAL STATEMENT

Jehoon Jeon is from Seoul, South Korea. He received B.B.A. in Business Administration and B.A in English Language and Literature (Dual Major, graduated with Cum Laude) from Sogang University in South Korea. Having professional experiences in marketing and media industries, he also received M.A. in Advertising from Michigan State University in East Lansing, MI. In 2009, he started his Ph.D. program in Communication Studies at Wayne State University in Detroit, MI. His research interests include health communication and new media. He will start working as a tenure track assistant professor at Eastern Connecticut State University from Fall, 2014.