

Improving Health Messages Targeting College Students Suffering from Depression:  
An Interdisciplinary Approach

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Jennifer Anette Lueck

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Marco C. Yzer

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## **Dedication**

To my deceased great-grandmother, Margarete Rosina Menzel - the most inspiring, heroic, and strongest woman I have ever known.

## Abstract

Major depression, as the most common among all mental disorders, has numerous detrimental and far-reaching consequences, especially for college students who are disproportionately affected by symptoms. Tragically, as depression symptoms and risk for suicide increase, actual help-seeking decreases (Kessler et al., 2005; 2007; National Institute of Mental Health, 2005) – a problem that could be targeted with effective health communication interventions prompting help-seeking for depression. Unfortunately, theoretical and practical guidance on how to best create effective depression help-seeking messages is largely lacking, mainly due to the separation of public health, psychology, and persuasion communication science. Most recently, some researchers have warned about potential unintended negative effects when promoting help-seeking messages for depressed individuals, suggesting the possibility that such messages may activate negative cognition influenced by depression (Klimes-Dougan & Lee, 2010; Lienemann, Siegel, & Crano, 2013; Lienemann & Siegel, 2016). The unique cognitive processes of depression relevant to the design of effective depression help-seeking messages are still poorly understood.

In order to provide comprehensive understanding of whether and how depression influences health information processing, the present research sought to address this gap in knowledge. The ultimate goal was to provide practical and theoretical suggestions for the design of help-seeking messages targeting those who suffer from depression. Two studies therefore examined 1) determinants of intentions to seek help for depression and the effects of responsibility framing and 2) depressed cognition underlying attention to, interpretation of, and memory for gain-and loss framed help-seeking messages.

Those effects were expected to operate through psychological mechanisms influenced by depression and show a) unintended negative effects for positively framed low responsibility framing and b) a higher persuasive advantage for negatively valenced loss framing versus gain framing.

In order to test the effects of framing techniques and depression on persuasive outcomes of depression help-seeking messages, two between-subjects experimental studies were conducted: Study 1 was an online study testing the effects of three depression help-seeking messages that varied in levels of responsibility framing (low responsibility framing, no responsibility framing, and information only framing). Study 2 was a lab experiment utilizing eye-tracking, self-report, and linguistic software to test the effects of gain-and loss framing and depression on attention to, interpretation of, and memory for depression help-seeking messages.

Results indicated that those high in depression appeared to avoid positive information more than those low in depression in the gain-framed message condition; however, no distinct depression biases were found for the loss-framed message condition. A match in message and mood valence also seemed to promote attention to disease information – those low in depression quickly fixated on disease information in the gain-framed message condition whereas those high in depression quickly fixated on disease information the loss-framed message. Results demonstrated that depression did not influence interpretation of depression help-seeking messages that differed in levels of responsibility framing. Depression did, however, influence effects of gain-and loss framed messages according to congruence of message valence and levels of depression – those who were depressed reported higher intentions to seek help after viewing the loss-

framed message versus the gain-framed message. Moreover, memory patterns suggest that those high in depression showed improved memory for sad people versus happy people. Furthermore, those high in depression showed much better memory for disease information in the loss-framed message condition. Linguistic analyses of immediate and free memory responses indicate a crucially important mechanism for explaining the effectiveness of loss frames for depression help-seeking messages. Those high in depression appeared to perceive help-seeking behavior as more risky in the loss-framed message condition, lending support to the assumption that help-seeking behavior acts as a detection behavior for those who suffer from depression (O'Keefe & Jensen, 2009; Rothman et al., 2006; Rothman et al., 1999).

The present research contributes to the advancement of effective depression help-seeking messages in multiple ways. First, expecting unintended negative effects for low responsibility framing is not yet warranted and more research is needed to determine under what circumstances positive framing techniques backfire for depressed individuals. Second, depressed individuals appear to already hold positive beliefs about the benefits of help-seeking for depression. Such beliefs could usefully be activated and reinforced with depression help-seeking messages. Third, depressed participants respond better to negative framing of self-relevant health information. Such framing induces higher levels of perceived risk, which ultimately prompts intentions to seek help.

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## CHAPTER I

### INTRODUCTION

Among the plethora of conditions that classify as mental illness (*the Diagnostic and Statistical Manual of Mental Disorders*, 5th edition DSM-5; American Psychiatric Association, 2013), depression stands out as the most prevalent mental illness worldwide. In the Global Burden of Diseases, Injuries, and Risk Factors Study, the World Health Organization (2013) states that 350 million people globally suffer from depression. 41% of all the years spent living with mental or behavioral disorders is attributed to depression (WHO, 2013). Studies suggest that about 75% of most lifetime mental illnesses show their first signs by age 24, but also an average lag of eight to ten years between the onset of symptoms and help-seeking (Kessler et al., 2005; 2007; National Institute of Mental Health, 2005). Depression is the strongest risk factor for suicide – the second leading cause of death among 15-34 year olds (CDC, 2014; Cheng et al., 2000). Such alarming statistics indicate a dire need for health messages successful in prompting timely professional help-seeking for depression.

Despite the vast increase of media coverage, academic research, and the general public health discourse on mental illness in recent years, little research exists on how to best reach and communicate with this vulnerable population in order to promote health behavior change. Evidence strongly suggests that health messages benefit from theory-based approaches (Glanz & Bishop, 2010; Rimal & Lapinski, 2009). However, such theories and subsequent persuasion principles in the behavioral sciences are often based on normative populations unaffected by mental illness. This is problematic, because evidence suggests that mental illness can influence the ways in which individuals engage

with self-relevant health information. For example, whereas individuals not affected by depression tend to overemphasize positive information, those who are affected perceive the same information through a negative filter. This negative filter can reduce the ability to anticipate positive outcomes as a result of perceptions of a flawed self in a mostly negative and unpredictable world. Relevant for messages promoting health behaviors in order to create positive health outcomes, it is plausible that the same health information could lead to distinctly different interpretation and outcomes for those who are and those who are not affected by depression. Crucial for the persuasive impact of health messages, this opposing difference in perception must be taken into consideration when designing messages for those who suffer from depression. Perhaps most importantly, using normative persuasion principles for health messages aimed to reach those who suffer from depression may not only be ineffective, but can also have detrimental effects.

Recently, researchers have expressed a strong need for caution when communicating with individuals who suffer from depression, because certain communication strategies may backfire (Klimes-Dougan & Lee, 2010; Lienemann, Siegel, & Crano, 2013; Lienemann & Siegel, 2016). For example, Klimes-Dougan and Lee (2010) found that a depression help-seeking billboard led to less favorable help-seeking attitudes and perceived message effectiveness than no information at all. Furthermore, the billboard intended to increase help-seeking for depression in order to prevent suicide actually strengthened associations between depression and suicide among those who were depressed (Klimes-Dougan & Lee, 2010). Other researchers have found that similarly well-intended depression help-seeking messages framed as low in responsibility (e.g., “You are not to blame for your depression”) and high in autonomy-

supportive language (e.g., using “may” and “you can” cues) resulted in lower help-seeking outcomes than messages not containing information related to help-seeking for depression (Lienemann, Siegel, & Crano, 2013; Lienemann & Siegel, 2016)

Such insights present unique challenges to the inquiry and delivery of health communication that need to be investigated to inform effective health behavior promotion messages. In order to fully understand depression and its implications for health message processing, the present research takes an interdisciplinary approach, integrating relevant research in communication science, clinical psychology, and public health. This research aims to connect knowledge from these areas in a meaningful synthesis and provide novel insights that can be applied to the design and dissemination of more effective health communication interventions targeting individuals suffering from depression.

To summarize, depression is a severe disorder with significant vulnerability factors and health risks among college students. Health messages prompting help-seeking for depression are crucially needed, however, current theory-based persuasion principles have been developed for populations not affected by depression. Because of depression’s influence on cognitive processes, such persuasion principles may be ineffective and even detrimental when used for depression help-seeking messages. The current research draws from communication science, clinical psychology, and public health in order to test the effects of depression help-seeking messages throughout the persuasion process – capturing attention, interpretation, and intentions to seek help across the severity of depression symptoms. Ultimately, this work seeks to inform effective depression help-

seeking messages by providing insights to the unique persuasion processes influenced by depression.

The outline of this dissertation is segmented into four chapters. Chapter I provides a synthesis and integration of the clinical perspective, the behavior change perspective, and the health communication perspective in order to present current, but not yet integrated research knowledge about depression, behavior change related to help-seeking for depression, and communication sciences related to effective design of depression help-seeking messages. In order to provide theoretical, as well as practical suggestions, this chapter discusses both the broader and practical implications of mental illness for depression help-seeking messages, as well as existing theoretical evidence and empirical questions yet to be tested. Chapter II presents study one, which focused on identifying the determinants of intentions to seek help, as well as investigating interpretational processes of depression help-seeking messages affected by disordered cognition utilizing a responsibility framing technique. Chapter III presents study two, which aimed to test the entire persuasion process of gain-and loss depression help-seeking messages capturing attention via eye-tracking methodology, interpretation and intention formation via self-report, and explicit memory via self-report and linguistic analysis. Chapter IV summarizes and discusses key findings of the present research and offers theoretical and practical implications, limitations, and suggestions for future research.

## The Clinical Perspective

### Depression as Public Health Issue

Effective health messages promoting help-seeking for depression are crucially needed. The World Health Organization classified depression as a common disorder with an estimated 350 million individuals affected worldwide, leading to a projection of depression as the major cause of disease in 2030 (Lépine & Briley, 2011; WHO, 2015). It is further stated that depression is a significant risk factor for suicide – over 800,000 individuals die by suicide each year (WHO, 2015), marking suicide as the third leading cause of death in individuals ages ten to 24 (McIntosh & Drapeau, 2012). Studies suggest that about 75% of most lifetime mental illnesses show their first signs by age 24, indicating an average delay of eight to ten years between the onset of symptoms and a health intervention (Kessler et al., 2005; NIMH, 2005). Furthermore, research suggests that women are twice as likely than men to develop and be diagnosed with depression (Kessler, 1993, Kessler, 2003).

This evidence led to various efforts to improve screening and treatment practices for those suffering from depression, because as evidenced by the delay of care, treatment is often not disorder-specific and effectiveness is difficult to assess. General risk factors for depression have been identified, such as personality (e.g., neuroticism; an individual difference in negative emotional responses to threat, frustration, or loss, Costa & McCrae, 1992; Goldberg, 1993), environmental (e.g., traumatizing events, such as adverse childhood experiences; Kessler, 1997; Kendler et al., 1999), and genetic heritability and sequencing (Flint & Kendler, 2014; Sullivan, Neale, & Kendler, 2000). In fact, it has been found that heritability accounts for about 40% of major depression (Lesch, 2004),

with neuroticism accounting for a significant proportion of this variance (Kendler et al., 2006; Lahey, 2009). Current investigations of brain-mapping are emerging and promising findings suggest potential biological markers of depression (Fitzgerald et al., 2008).

However, due to the limitations of current research on biological markers, the Diagnostic and Statistical Manual of Mental Disorders (DSM) is widely used as the standard guide on mental illness symptomatology. It contains three major components – the diagnostic classification, diagnostic criteria sets, and descriptive text. It is intended to be used in clinical settings by mental health and other health professionals, in order to guide assessment and treatment plans (American Psychiatric Association, 2013). The DSM classifies depression into disruptive mood dysregulation disorder (for children up to 12 years), major depressive disorder, persistent depressive disorder (dysthymia, which lasts for at least two years), premenstrual dysphoric disorder, substance/medication-induced depression disorder, and unspecified depressive disorder. Most recently, these categories have been separated from the “bipolar and related disorders,” which used to be part of the depressive disorder spectrum (American Psychiatric Association, 2013).

The common feature of depressive disorders is the presence of a sad, empty, or irritable mood, which is often accompanied by somatic and cognitive changes that significantly affect the individual’s capacity to function. Aspects that differ across depressive disorders are time length of depressive symptoms, timing of onset of symptoms, and presumed causes. The focus of this particular research is major depressive disorder, because it is the classic condition in this group of disorders (depression) and a discrete episode has to last for only about two weeks, which still results in significant and observable changes in affect, cognition, overall health and quality of life. Five or more of

the following symptoms have to be present in the same two-week period to be considered as “major depressive episode”: Depressed mood most of the day, nearly every day, subjective report (sad, empty, hopeless) or observation by others (appears tearful), diminished interest/pleasure in all, or almost all, activities most of the day, nearly every day (subjective/observation), significant weight loss without trying/weight gain, decrease/increase appetite, insomnia/hypersomnia nearly every day, psychomotor agitation or retardation nearly every day (observable by others, not merely subjective), fatigue/loss of energy nearly every day, feelings of worthlessness/excessive/inappropriate guilt (may be delusional) nearly every day, diminished ability to think or concentrate/indecisiveness nearly every day (subjective or observed), recurrent thoughts of death (not just fear of dying), and suicidal ideation with/without specific plan (American Psychiatric Association, 2013)

The difference with a more endogenous understanding of depression, in other words, depression caused by traumatizing life events, such as loss of a loved one, is that the feelings of loss and emptiness are related to the event only and self-esteem is typically preserved (Boelen & van den Bout, 2005). In the case of a major depressive episode, however, persistent depressive mood and the inability to anticipate happiness or pleasure is ever-present, which is often tied to self-critical and pessimistic ruminations, as well as feelings of worthlessness and self-loathing. Those who are affected, as well as their immediate social environment, are often not able to identify direct causes of the depressed person’s feelings of worthlessness and guilt. Research has uncovered internal processes affected by depression that lead to unrealistic evaluations of self-worth and

increased ruminations over perceived failures, which bias<sup>1</sup> the depressed person's thinking and feeling toward negative evaluations (American Psychiatric Association, 2013; Pyszczynski & Greenberg, 1987; Sowislo & Orth, 2013). Neutral or trivial day-to-day occurrences are often perceived through a negative, self-devaluating lens, which exaggerates feelings of personal defects (e.g., I can never succeed/I cannot do anything right), as well as an exaggerated sense of responsibility (e.g., all negative events are caused by me, they are my fault) (Blaine & Crocker, 1993). In addition to this, depressed individuals often report an impaired ability to think and make minor decisions; they are easily distracted, and report diminished memory (Leykin, Robers, & DeRubeis, 2011; Marvel & Paradiso, 2004).

Unfortunately, no valid lab test has yielded promising strategies to sufficiently test for depression. Although there are distinct functional abnormalities that are related to emotion processing, reward seeking, and emotion regulation that have been uncovered through fMRI research, current diagnostic assessments in clinical settings are based on self-reports (Anderson et al., 2002; Eaton et al., 2000, Groenewold et al., 2013). What complicates the accurate diagnosis of depression is the lack of clear boundaries of the disorder and discrete symptoms that are similar across patients (Widiger & Samuel, 2005). The lack of clear boundaries between different types of mental disorders, such as depression and anxiety, also lead to different symptoms for each affected individual. For example, both anxiety and depression are related to inhibition, negative affect, personality factors (neuroticism), and harm avoidance behavior, which makes it difficult

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<sup>1</sup> As indicated by Wisco (2009), the term “negative bias” is misleading due to previous examinations of the relative differences between depressed and non-depressed groups without objective standard. Despite

to clearly attribute symptoms to a single disorder (Kendall & Watson, 1989; Suls & Bunde, 2005).

Other symptomatic conditions are also likely to co-occur, such as panic disorder, obsessive-compulsive disorder, anorexia nervosa, and borderline personality disorder, among others (Kessler et al., 2013). Therefore, comorbidities, the bidirectional associations of multiple diseases in a patient, are the rule with mental health disorders such as depression (Freedland & Carney, 2013; Hackett & Pickles, 2014).

Not only does this complicate psychological assessment, diagnosis, and treatment plans, but it also contributes to delayed care. Many depressed individuals fail to recognize their symptoms as indicative of depression. Paired with a social stigma of depression and the internal processes of depressed cognition and affect that complicate the individuals' ability to separate the disorder from the self, many of those who are affected suffer in silence and do not seek help (Barney et al., 2006; Hunt & Eisenberg, 2010; Pyne et al., 2004).

The often very high mortality rate among depressed individuals underscores this issue – it is not only due to suicide, but other factors, such as the influence of depression on poor lifestyle choices affecting overall health, increasing the risk for other chronic conditions such as diabetes, morbid obesity, and cardiovascular disease among those who are depressed (Katon, 2011). Confirming previous research (Freedland & Carney, 2013; Gasse; Pan et al, 2011), a recent population-based study with severely depressed individuals suggests that mortality risk for this population is twice as large as for non-depressed individuals (Laursen, Baune, 2014). This leads to a shortened life expectancy of about 14 years for men and 10 years for women due to natural causes of death if

unipolar depression begins at age 15. Exasperating these troubling statistics, the authors concluded that the presence of comorbidities and substance abuse further decreases overall life expectancy (Thase, 2016).

Before help is sought, depressed individuals have likely already engaged in harmful coping behaviors, leading to substance-related disorders such as alcoholism, smoking and/or drug use (Bolton et al., 2008; Mendelsohn, 2012). It becomes clear that depression is a complex disorder with a unique range of symptoms related to depression and other comorbidities for each affected individual. Approaches to the improvement of the condition, whether in clinical or social contexts, must therefore be equally personalized and tailored to the individual.

**Critical assessment of diagnostic criteria.** The problem that exists in the clinical setting is that the DSM V (2013) as a guide to mental disorders has often been criticized due to its inconsistencies and overall limitations (Horwitz & Wakefield, 2007). The most important critique pertinent to the study of mental health is the argument that it creates false positives, or the diagnosis of tens of millions of newly identified mental health patients, which greatly exacerbates the over – and misdiagnosis of the many mental health patients in recent years. This phenomenon tends to result in more problems: overtreatment with unnecessary medication with severe side effects (e.g., anti-depressants), increased expenses for the individual and the health care system as a whole, and other harms based on public health factors, such as economic implications of mental health contingencies. Many mental health experts suggest that the DSM V as a guide to diagnosing mental health disorders leads to the labeling of normal fluctuations in mood, stress, and behaviors as mental disorders (Frances, 2012; Pickersgill, 2013).

In summary, this criticism challenges society, physicians, as well as health communication researchers and interventionists to re-consider the core concept of depression in light of the low threshold of the diagnostic manual and the fuzzy boundaries between mental health conditions. These points have to be considered when dealing with a population of depressed individuals, since multiple risk factors are intertwined. What is healthy versus what constitutes a mental health disorder is therefore not as easy of a question to answer as it may first seem, which has implications for inquiries in the field of health communication. The focus on professional help-seeking in the present research is a concrete, although insufficient, first step in order to understand the cognitive and affective barriers to effective treatment and care. The current research therefore zooms in on one tangible path to improving one's condition, but will ultimately be embedded into a broader context with audience-specific questions about alternative ways of coping and seeking help (e.g., interpersonal relationships, meditation and lifestyle changes, and chat-or phone-based help-seeking communication).

**Depression and help-seeking among young adults.** International studies have shown that the prevalence of mental illness and its fundamental contribution to the overall disease burden in society is greatest among young adults (Patel et al., 2007). Despite this high burden, young adults are the least likely population group to seek help and to access professional care for mental health problems (Rickwood, Deane, & Wilson, 2007). This is problematic as Burns and Birrell (2014) indicate, because mental illness, if left untreated, often translates into both short- and long-term functional impairment, including poorer education and employment opportunities, potential comorbidities,

including drug and alcohol problems, and a greater risk for antisocial behavior, including violence and aggression.

Boynton Health Services' 2015 College Student Health Survey Report indicates that 20.8 percent of University of Minnesota students have been diagnosed with depression in their lifetime (not counting those who have not sought help), which marks depression as a top mental health concern along with anxiety (21.7 percent). The American College Health Association (2011) reports that 30% of college students have felt symptoms of depression so severe that it was "difficult to function" (p. 14). Symptoms can become so severe that the affected individual is at risk for suicide, which is the third leading cause of death among young adults (CDC, 2015). The National Institute of Mental Health (n.d.) states that most individuals experience the first symptoms of depression during their college years, which presents both a challenge and an opportunity for communication scholars to reach a large number of depressed college students at an important stage of their life. In fact, college students' main activities, both social and professional, are integrated in a single setting that also offers valuable health resources, such as mental health services. Despite the optimal setting and ability of college settings to disseminate and provide support for mental health problems, this opportunity has not been properly seized to its full potential (Buchanan, 2012; Hunt & Eisenberg, 2010).

The mental health of college students is a growing concern not only for society (Mistler, Reetz, Krylowics, & Barr, 2013) but also for communication practitioners and scholars, who seek to find effective ways to address college students' mental health issues. The American College Health Association (2012) found that only 24 percent of

college students diagnosed with depression were receiving treatment. Another study found that fewer than half of the students who screened positive for major depression or anxiety disorders have received any mental health treatment within one year (Hunt & Eisenberg, 2010). Furthermore, Eisenberg, Golberstein and Gollust (2007) found that of students who screened positively for depression or anxiety, the proportion that did not receive help ranged from 37 percent to 84 percent, depending on the disorder. Therefore, there is consistent evidence across multiple studies that college students suffering from depression rarely receive the help they need. Previous research has identified lack of perceived need for help, skepticism about treatment effectiveness and stigmatizing attitudes of students about mental illness as major barriers to help-seeking behaviors (Hunt & Eisenberg, 2010).

The alarming mental health status of U.S. American college students therefore calls for appropriate health communication strategies, which could motivate depressed students to seek help. To put it differently, current anti-depression efforts may not be effective in motivating college students with depression to seek help. One reason for this is cognitive bias, such as the reversed attribution error, which may offer insight into this phenomenon. Such biases lead to increased feelings of responsibility for negative circumstances, as well as negative affect (increased feelings of shame).

There are inconsistencies in interpretations of help-seeking statistics among young adults because the trends of depression disorders over time are poorly understood. In a national survey, most directors of psychological counseling centers on college campuses indicated a significant increase in severe psychological problems and help-seeking among students (ACHA, 2008). The plea of mental health professionals on

college campuses to increase efforts due to a higher volume of students in need that show a variety in types and severity of mental health issues has led to a re-evaluation of the evolution of mental illness and help-seeking over time. (Clay, 2013). Hunt and Eisenberg (2010) discussed a possible alternative explanation in their review. Whereas increased help-seeking cannot be ruled out as causal mechanism of higher prevalence and detection of mental health problems among college students, it is important to focus on the increase in severity of mental health problems, as indicated by mental health professionals on college campuses. Due to a lack of systematic data over time and the different use of diagnostic measures of depression (i.e. changes in the DSM of symptoms of depression which lead to changes in measures), it has become increasingly difficult to detect a general consensus regarding the trends over time in regard to the evolution of mental illness among younger populations.

Despite a recent increase in help-seeking, college students with depression remain a unique target audience of (mental) health communication, because academic pressures and social relationships are intertwined and students are still forming their identities, which ultimately increases vulnerability for certain stressors of mental health issues (Tartakovsky, 2013). Risk factors can be separated into academic stressors, personality factors, and demographic and social factors. Overall, the most apparent stressors seem to be stable across studies and relate to academic performance problems, relationship issues, loneliness, and financial worries, among others (Womble, 2003). To summarize, while it does make sense to focus on college students based on the literature, the target behavior of help-seeking has to be critically examined due to the criticism of diagnostic tools (DSM V and self-reports), the overwhelming nature of current help-seeking behavior on

college campuses, and the questions regarding effectiveness of traditional help-seeking and medication treatment for less severe forms of depression.

Related to the comorbidities of depression such as diabetes and obesity, which often induces lifetime disability (Deschenes et al., 2015; Opel et al., 2015), it has been shown that exercise does not only contribute to healthy weight management and physiological functioning, but also improvement of neurological components important for the establishment and maintenance of positive moods and mood regulation. While the recent increase in treatment of mental disorders is, in a way, encouraging, it can be argued that a stronger focus on actual healthy lifestyle changes (e.g., exercise, nutrition, etc.) may be more effective as a first-line treatment of low-grade depressive disorders.

This would not only reduce the amount of ineffective and inadequate professional treatment, but may also prove to be effective for two other reasons. First, it may circumvent the stigma that is associated with professional help seeking given depressed cognition (e.g., I am a failure I am ashamed to seek help), and secondly, lifestyle changes may provide sufferers with a sense of self-esteem and efficacy (if communicated effectively and incorporated into the depressed individual's lifestyle successfully) and prevent other comorbidities (e.g., diabetes, weight issues, cardiovascular disease). However, due to the fact that health communication research focusing on depression is still in its infancy, it is crucial to first understand the cognitive and affective barriers to professional help-seeking among those who are depressed in order to uncover how such processes might interact with communication strategies. Only then can such insights on the psychology of depression and effectiveness of persuasive health communication

strategies lead to appropriately tailored health communication strategies encouraging one or more health behaviors.

### **Biased Information Processing**

In order to fully understand audience characteristics and information processing influenced by depression, it is crucial to review the clinical and social psychology literature. Within the field of psychology, mental illness as a topic of inquiry was first studied from a research perspective that emphasized external, or learned behavior (Kanter et al., 2008) rather than internal cognitive processes. In the context of depression, Seligman and Campbell (1965) stressed that depression is learned behavior and not the outcome of maladaptive cognitive processes, as his research on learned helplessness explains. In line with behavioral principles, his experimental research on behavioral conditioning aimed to show that depressed individuals have been conditioned by their environment to experience no sense of control over their actions and the resulting outcome of such actions. In other words, learned helplessness therefore not only refers to the inability of depressed individuals to envision positive outcomes of their own actions, but it also suggests that depressed individuals will not be motivated to engage in any action that may produce positive outcomes or avoid a negative ones (Seligman, 1972).

Researchers also investigated stable personality characteristics as risk factors for depression, such as low self-esteem (e.g., Abramson, Seligman, & Taesdale, 1978; Beck, 1976). Recent meta-analyses have confirmed the importance of low self-esteem as a vulnerability factor leading to depression (Orth & Robins, 2013; Sowislo & Orth, 2013), even when stressful life events and lower narcissistic self-enhancement are controlled for (Orth, et al., 2014; Sowislo, Orth, & Meier, 2014). Furthermore, as noted by early

research and strongly connected to the vulnerability factor of low self-esteem, the “black box” of depression strongly points to negativity as a major influencing factor of not only the contents of thoughts, but also the direction of such negative thoughts, which is turned inward and strongly influences perceptions of the self (Beck, 1967).

Researchers began investigating the cognition, or thinking styles, of individuals affected by depression (Aaron T. Beck, 1976; Peterson et al., 1988). Such cognitive theories of depression, as opposed to theories focusing on learned behavior, have been mainly focused on the content or the processes of thought influenced by depression (Beck, 1976; Wisco, 2009). Since the emergence of various cognitive theories of depression, a consensus has been reached that depressed cognition is an umbrella term for a negative view of the self that further drives negative views of the future and the world in general (Beck, 1976; Haaga, Dyck, & Ernst, 1991).

When comparing and contrasting cognitive processes in individuals with depressive mood disorders and those without, it is first important to note that all cognition is biased (Banaji & Greenwald, 2013). This is important to understand, because in healthy individuals, cognitive biases are affective processes with the goal of sustaining a positive view of the self (Ashby, Isen, & Turken, 1999). Instead of viewing the world and the future as reflective of a negative, defective self, cognitive processes in healthy individuals are simply reversed and therefore often reflective of an overly positive, rather than overly negative, view of the self. Such self-serving biases, or cognitive biases, have been linked to mental health. In other words, individuals need to justify their thinking, behavior, and environment in order to feel good about themselves and remain mentally healthy.

Important for the current inquiry, it is not only the content of depressive thinking that is important to take into account when designing help-seeking messages. Central to the question of how to effectively design persuasive help-seeking messages are the ways in which depressed individuals pay attention to, interpret and relate to health information. Since health information about depression is inherently self-relevant for those who suffer from depression, negative views of the self are likely influencing cognitive processing of such information (Bargh, 1982; Wisco, 2009). As evidenced by the DSM V, which lists “feelings of worthlessness” (p. 161) as one symptom of depression, this negative sense of self directly influences how individuals feel and think about their own potential help-seeking behaviors. Because depressed individuals report “more negative views of themselves on self-report measures, make more pessimistic predictions for themselves than for others, and respond to self-reflection with more negative mood and thinking” (Wisco, 2009, p. 384), such processes must be considered when trying to persuade depressed individuals to seek help.

The cognitive processes that take place upon exposure to persuasive depression help-seeking messages have previously been sectioned into three major stages – attention processes, interpretation processes, and explicit memory processes (Wisco, 2009). Each stage will be discussed in detail in the following sections.

**Attention.** Previous research has not produced clear results in regard to whether and when depression affects attention processes. Some studies suggest that due to a negative thinking style, depression influences the affected individuals to pay more attention to negatively valenced stimuli than non-depressed individuals (Disner, Shumake, & Beevers, 2016). Since attention processes are automatic rather than fully

conscious, however, researchers have argued that cognition is likely not yet biased at this stage (Williams et al., 1997).

Wisco (2009) suggests that differences between depressed and non-depressed individuals only occur at deeper, more elaborative levels of information processing, when negative thoughts and information stored in memory are activated. Whereas depressed individuals and non-depressed individuals may not differ in how they initially pay attention to both positive and negative information, depressed individuals may be more likely to dwell on negative information longer and return to this information more often than non-depressed individuals (Wisco, 2009). In a series of dot-probe studies, depressed and non-depressed individuals were confronted with sad and happy faces and reaction times were measured. For longer durations of exposure to information (e.g., 1000 ms), researchers have found negative biases for sad faces, but not for happy faces, among those who are depressed (Gotlib et al., 2004; Gotlib et al., 2004). Furthermore, some studies point to the possibility of not only increased attention for negative faces, but also reduced attention for happy faces among those who are depressed for exposure times ranging from 500 ms to 1250 ms (Bradley et al., 1998; Bradley et al., 2000). Other research has found no influence of depression on attention processes even at longer exposure durations. In these studies, however, depression was confounded with other types of mental illness and different developmental stages of study participants (Wisco, 2009).

A more precise measure of attention and how it is affected by depression is achieved with eye-tracking technology. Eye-tracking allows for the recording of how quickly individuals fixate on stimuli, how long they fixate on them, and how many times

their eye-movement returns to them during exposure (Wisco, 2009). Eye-tracking studies have produced mixed results as to whether attention is significantly influenced by depression. For example, research has supported the hypothesis that depressed individuals tend to fixate on sad content for longer durations of time (Eizenman et al., 2003) and more often (Matthews & Antes, 1992) than non-depressed individuals. There are likely no differences in sequence of attention to sad or happy content (i.e., implicit orienting responses) and how long individuals fixate on happy faces (Caseras et al., 2007), suggesting that depressed individuals are not initially more drawn to negative information than non-depressed individuals (Wisco, 2009).

**Interpretation.** Interpretation refers to the ways in which information is explained or understood. Evidently, the ways in which people interpret information is influenced by their experiences, cultural background, and many other factors. Arguably, the ways in which people interpret information is also shaped by their psychological make-up, especially when this information involves perceptions of the self. Relevant for health communication, information is often provided to motivate a person to engage in a health behavior, which naturally activates such perceptions that can either support or complicate the persuasive aims of a health message.

Individuals with depression and those without distinctly differ in their psychological mechanisms protecting the self. The pursuit of understanding the self and its consequences has been one of the major goals in the field of (social) psychology.<sup>2</sup> The understanding of the self has led to a large body of knowledge regarding social cognitive processes, and more specifically, core human motives that underlie cognitive processes

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<sup>2</sup> For a comprehensive review, see Cooley, C. (1902), James, W. (1907), Mead, G. H. (1934), and Beer, J. S. (2012).

guided by the ultimate goal of protecting the self (Fiske, 2010). For purposes of this research, the self is defined as the individual's knowledge about him or herself, which leads to a sense of self that is highly sensitive and subjective (Fiske & Taylor, 2013). The self guides a multitude of cognitive processes, especially those that are self-relevant, as it is the case with depression health messages among those who suffer from depression.

Whereas non-depressed individuals engage in self-serving biases to maintain a positive perception of the self, depressed individuals often engage in reversed cognitive processes (Abramson et al., 1978; Mezulis et al., 2004; Seidel et al., 2012). The reversed attribution error (i.e. attributing causal responsibility for negative circumstances to the self instead of outside sources), for example, has significant long-term effects in regard to mental health. It is generally unclear whether biased cognition causes depression or whether depression causes biased cognition. However, the mere association of depression and negatively biased cognition is of crucial importance to strategic health communication.

Individuals not suffering from mental health disorders have a tendency to engage in motivated reasoning to help maintain a positive perception of the self (Blaine & Crocker, 1993). Depressed individuals, on the other hand, tend to attribute stressful circumstances and negative experiences more to internal causes than do non-depressed individuals (Beck, 1967; Ebmeier et al. 2006; Ritzley, 1978). A feeling of inadequacy, failure, and worthlessness (Beck, 1967) is ever-present, which carries over to predictions about the future due to the perception of difficulties as never-ending. Coyne and Gotlib (1983) add that depressed individuals tailor information perceived as facts to their negative biases. While other explanations and more positive interpretations seem

plausible, depressed individuals engage in such thinking patterns due to their negative self-schema influenced by symptoms of depression (Lienemann, Siegel, & Crano, 2013). The fact that depressed individuals are more likely to interpret even hypothetical scenarios as more negative than non-depressed individuals has been confirmed in both self-report studies (Carver, Ganellen, & Behar-Mitrani, 1985; Haley et al., 1985; Krantz & Hammen, 1979; Miller & Norman, 1986) and psychophysiological studies (Lawson, MacLeod, & Hammond, 2002).

A schema is a mental map that has systematic errors especially in depressed individuals due to the heightened negative bias (Beck, 1967). Positive information is ignored while negative information is reinforced, which is highly congruent with the affective states of depressed individuals. Therefore, experiences are distorted due to dysfunctional schemas, which prevent the matching of more appropriate ones. In turn, as such schemas become more active, they can be activated by a multitude of stimuli (Coyne & Gotlib, 1983), such as strategic health messages.

The aforementioned explanations serve to illustrate that depression might influence and even bias interpretation of health information related to the self. It is therefore crucial to understand how depressed individuals interpret depression help-seeking messages and to investigate whether non-depressed individuals show distinctly different ways of interpreting this information.

**Explicit Memory.** Explicit memory refers to the conscious recollection of information, as opposed to implicit memory, which does not require conscious effort. Because implicit memory operates on a discrete set of mechanisms not necessarily related to explicit memory, the following review focuses on explicit memory only.

The distinction between self-relevant and non self-relevant information is crucial when considering how depressed cognition affects memory. Previous research has clearly pointed to the fact that the negative views of the self influence memory for self-relevant, but not for other-relevant information (Derry & Kuiper, 1981; Kuiper & Derry, 1982). Most importantly, because self-relevant information increase levels of elaboration (Williams et al., 1997), such information tends to be better stored in memory than other, non self-relevant information.

Because elaboration occurs when new, incoming self-relevant information is connected with pre-existing information in memory, is it plausible that negative information is a better cognitive match leading to stronger cognitive associations and improved memory for negative information among those who are depressed. The effect of improved memory for negative information over positive information among those who are depressed has been referred to as “mood congruence” (Blaney, 1986; Matt, Vasquez, & Campbell, 1992; Wisco, 2009, p. 385). This assumption has been confirmed in studies on memory for valenced words among depressed individuals. For example, depression increased memory for self-relevant negative words rather than self-relevant positive words or any words in reference to others (D’Argembeau et al., 2005; Denny & Hunt, 1992; Derry & Kuiper, 1981; Dozois & Dobson, 2001; Kuiper & Derry, 1982). These effects are confirmed to be reversed in non-depressed individuals, leading to better memory for self-relevant positive words compared to self-relevant negative words or any words in reference to others (Wisco, 2009).

In sum, evidence suggests that depression influences attention, interpretation, and memory processes for long exposure times and deep levels of processing (Wisco, 2009),

as depicted in table XX below. As cognitive biases influences elaboration in depressed individuals, they also influence the ways in which depressed individuals engage with new information. Increased self-relevance, as it is the case with depression help-seeking messages, likely induces strong negatively biased information processing among those who are depressed, but only at later stages of processing. Since no previous research to date has tested the influence of depression on the cognitive processing of persuasive depression help-seeking messages, the current research explores these mechanisms in order to inform more effective health messages targeting those who are depressed.

Table 1

*Influence of Depression on Cognitive Processing (Wisco, 2009, p. 389)*

<b>Processing Stage for Self-Relevant Stimuli</b>	<b>Depth of Processing</b>	
	Early processes (low elaboration)	Later processes (high elaboration)
Attention	Little evidence for influence of depression	Tendency to return to or to dwell on negative information (longer presentation times)
Interpretation	No evidence for influence of depression	Greater chance of negative interpretations among depressed
Memory	Little evidence for influence of depression	Robust evidence for influence of depression on explicit memory; some for implicit memory

## The Behavior Change Perspective

### Belief-Based Behavior Change

Understanding the factors that shape help-seeking in a college student population contribute to the design of messages that can address these factors in order to improve actual help-seeking. Reasoned action theory is a useful theoretical tool in this regard. Applied to the context of promoting help-seeking for depression, the theory postulates that three main factors, i.e. attitudes, perceived norms, and perceived behavioral control regarding help-seeking determine individuals' intentions to seek help. A variety of health behaviors, including smoking, alcohol consumption, exercise, and health services utilization among many others, have been effectively studied using the reasoned action framework (for meta-analytical findings see Albarracin et al., 2003; Armitage & Conner, 2001; Cooke & Sherran, 2013).

**The reasoned action framework.** Reasoned action theory has been revised and reformulated over the last 50 years. Fishbein and Ajzen (1975) created the original theory of reasoned action, which was the basis for several revisions, such as the theory of planned behavior (Ajzen, 1985), the integrative model of behavioral prediction (Fishbein, 2000), and the most current version, the reasoned action approach to explaining and changing behavior (Fishbein & Ajzen, 2010). The term reasoned action theory refers to the theory's most current formulation and captures the theoretical propositions essential to all versions of the theory. Reasoned action theory has been widely used to explain health behaviors and inform health interventions (Yzer, 2013).

The general tenet of reasoned action theory is that a limited set of variables can account for a large proportion of the variance in behavior: "We argue that human social

behavior is really not that complicated, that people approach different kinds of behavior in much the same way, and that the same limited sets of constructs can be applied to predict and understand any behavior of interest” (Fishbein & Ajzen, 2010, p. 2). Knowing the determinants of a health behavior in a given population is important, because this knowledge can be directly used for the design of health messages. Reasoned action constructs, namely behavioral intention, attitudes, perceived norms, and perceived behavioral control are shaped by a person’s unique beliefs – and incorporating this information into health message design likely leads to better message tailoring to intended audiences.

Behavioral intention, or the readiness to engage in a behavior, is a person’s estimate about how likely it is that s/he will engage in the behavior. The theory postulates that actual health behavior can be predicted from intentions to engage in the behavior if no environmental constraints or lack in actual skills to engage in the behavior limit behavioral performance. For example, one may intend to walk to a destination instead of driving, however, the weather (environmental constraints) or lack in ability such as an unexpected injured leg (actual skills) might hamper such intentions.

Furthermore, behavioral intentions themselves are predicted from attitudes, perceived norms, and perceived behavioral control regarding the particular behavior. Those three factors split into two components each. Attitude, or the individual’s evaluation of the health behavior, splits into instrumental attitude (the evaluation of the health behavior in terms of positive and negative attributes, such as “foolish” or “wise”) and experiential attitude (evaluation of the health behavior in terms of the positive and negative affective experiences, such as “pleasant” or “unpleasant”). Returning to the

example used earlier, one can believe that walking instead of taking the car would be wise (instrumental attitude), because it promotes health and saves money, but the act of walking could still be perceived as unpleasant (experiential attitude).

Perceived norms refer to the extent an individual expects pressure from others to engage or to not engage in the health behavior. It splits into injunctive norm (the extent to which important others are expected to approve or disapprove the individual's health behavior) and descriptive norms (the extent to which the individual believes that important others engage in the health behavior themselves). Illustrating perceived norms using the example of walking instead of taking the car, perhaps the individual would expect family and friends to encourage walking instead of taking the car (injunctive norms), but may doubt that they actually are walking more than driving (descriptive norms).

Perceived behavioral control comprises the extent to which an individual expects that he or she can successfully engage in the health behavior. It splits into perceived capacity (the perceived ability to engage in the health behavior) and perceived autonomy (the extent to which the decision to engage in the health behavior is perceived to be up to the individual). Once again using the example of walking instead of taking the car, an individual might believe that he or she is physically capable of walking instead of taking the car (perceived capacity), but might believe that this decision is for someone else to make, such as a significant other, for example (perceived autonomy) (see figure 1).

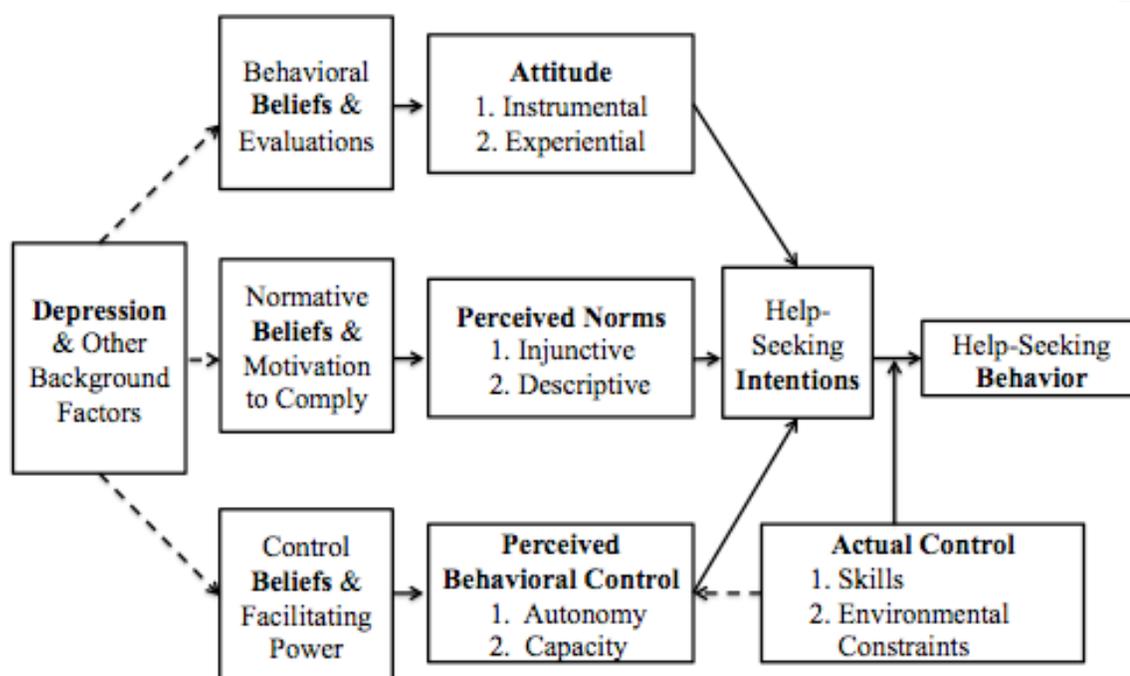


Figure 1. Reasoned Action Theory Applied to Help-Seeking for Depression.

Recognizing the need to increase help-seeking for depression among college students, health intervention professionals have thus far grappled with how to best achieve this goal through effective communication strategies. Remarkably, the determinants of help-seeking among college students who suffer from depression have not yet been investigated in concert with communication strategies and current depression help-seeking messages are therefore not based on an understanding of which factors in fact shape help-seeking.

**Mental illness and behavioral change.** Many researchers have criticized the reasoned action approach for multiple reasons. The criticism most pertinent to the study of help-seeking for depression is the argument that the reasoned action framework assumes rationality in the behavioral intention formation process. In other words, critics argue that the theory suggests rational decision-making to engage in certain behaviors or

not, deeming this approach inappropriate for most behaviors that are based on irrational, even unconscious motivations, such as drunk driving or unprotected sex (St. Lawrence & Fortenberry, 2007). Reaching consensus that most psychological processes determining a health behavior are strongly biased and irrational, especially among those suffering from a mental disorder such as depression, this criticism would suggest that reasoned action theory cannot be effectively used in a college student population affected by depression.

Rationality, however, as it refers to the active consideration and rational evaluation of a range of behavioral options, has never been assumed in reasoned action theory. The most direct rebuttal comes from the founders of the theory themselves, who state that “there is nothing in our theory to suggest that people are rational or that they behave in a rational manner” (Fishbein & Ajzen, 2010, p. 301), indicating that the theory can, indeed, predict what is considered irrational behavior, such as speeding, smoking, unprotected sex, and addictive behaviors. Following reasoned action principles, even irrational and biased beliefs influence behavior in a reasoned manner. In the case of depression, for example, a student might drop out of college in response to a single poor test grade, because s/he believes that s/he is a failure in general due to depressive thinking, even though everyone around the student feels that s/he is not a failure. The sequence of how such irrational beliefs influence behavior is in line with reasoned action principles.

Crucially important for the understanding of the theory’s propositions, *rational* behavior should not be confused with *reasoned* behavior. All behavior is subject to a causal sequence of psychological processes ranging from attitudinal, normative, and

control beliefs regarding the behavior to the engagement in the actual behavior itself.

This is where health messages have an opportunity to intervene and influence behavior indirectly by changing or reinforcing beliefs. The tenets of reasoned action theory argue the possibility for biased, irrational, or disordered psychological processes. The nature of beliefs regarding help-seeking for depression – beliefs that are likely disordered and based on a distorted view of reality in the case of depression – follow a causal and consistent chain of determinants in the reasoned action framework.

the reasoned action framework assumes a causal and consistent chain of determinants that follow from these beliefs. This particular sequence, regardless of accuracy or rationality of beliefs, is referred to as *reasoned* in the reasoned action framework (Blank & Hennessy, 2012; Fishbein & Ajzen, 2010).

Testing the usefulness of the reasoned action framework to explain irrational, biased, and disordered behavioral processes, Blank et al. (2012) investigated safer sex behavior among those suffering from severe mental illness. In line with expectations, the reasoned action framework explained a high proportion of the variance in condom use among those affected by severe mental illness, confirming the applicability of the framework in the context of populations affected by mental illness.

To summarize, reasoned action theory proposes a reasoned, but not necessarily rational, sequence of psychological processes responsible for behaviors. The theory has been shown to account for behaviors that follow from irrational, incorrect, or motivationally biased beliefs (Yzer, 2013), suggesting its usefulness for the study of depression. Identifying the important predictors of forming intentions to seek help in a college student population is helpful, because those predictors can be effectively changed

or reinforced with persuasive health messages in order to promote help-seeking for depression.

Despite the theory's usefulness in informing content of depression help-seeking messages, it cannot inform message design, such as the selection of audiovisuals, narratives, duration of exposure, and various other stylistic choices (Fishbein & Ajzen, 2010; Yzer, 2013). In accordance with recommendations, "The [reasoned action] theory offers little guidance as to the specific strategies that will most effectively bring about the desired changes in behavioral, normative, or control beliefs. Such guidance must come from outside our theory" (Fishbein & Ajzen, 2010, p. 367). It is therefore suggested to combine the theory of reasoned action with other theories in persuasion communication science in order to inform both content and design of effective health messages. Since the same informational content can be framed by an argument in different ways, leading to distinctive persuasive effects, framing research can provide important guidance for health message design.

### **Message Framing Theory**

Health messages contain a multitude of components that can influence message effects. For example, whereas deciding on message content is arguably an early and central part of message creation, decisions regarding its presentation, such as style and structure, are closely associated and equally important for persuasion purposes. Whereas the reasoned action framework identifies what should be said in health messages in order to promote any given behavior, it leaves uncertainty about how such arguments should be presented. Following recommendations by the theory's founders (Fishbein & Ajzen,

2010) the reasoned action framework should therefore be complemented with other appropriate theories in order to inform both the content and design of health messages.

Investigating the effects of message features is central to the study of persuasive communication. Message framing research is essential to this investigation. It suggests that the same information can have distinctly different effects depending on how it is framed. In other words, persuasion often takes place according to *how* something is said in addition to *what* was said. Framing principles have been widely used in journalism, political communication, and other areas of communication in order to influence an audience's perception of a given issue and exert influence.

These simple variations in how message content is presented have also been investigated in the context of health messages and their effects. Clearly, the goals of health messages often focus on motivating people to engage in health behaviors (e.g., exercising daily) or preventing people from engaging in behaviors that may put their health at risk (e.g., smoking). Given such differences in behaviors, stylistic strategies must be matched with the nature of the promoted behavior. Especially in the context of promoting help-seeking for depression, it is plausible that message framing is not only a delicate, but important consideration.

**Responsibility framing.** Framing an argument to cue a person's perception of responsibility for any given issue has been an important strategy in persuasive political communication in order to influence voting behavior (Iyengar, 1991), but also in other areas such as journalism and, most recently, health communication. Responsibility framing is based on the principle of attribution (Weiner, 1980). Research applying attribution theory "deals with how the social perceiver uses information to arrive at a

causal explanation for events. It examines what information is gathered and how it is combined to form a causal judgment” (Fiske & Taylor, 1991).

According to this principle, the mechanism responsible for a resulting behavioral choice is the perceived level of responsibility and the emotions that are attached to it. For example, research suggests that people are more likely to help others (behavior) if they feel pity and empathy (affect) for someone in need who has no apparent control (attribution) over their helpless situation. In contrast, if people believe that helpless others have control (attribution) over their helpless situation, they are more likely to feel anger and disgust (affect) toward these people and are less likely to provide help (no behavior) (Hannah & Cafferty, 2006; Zucker & Weiner, 1993). This is an important principle, because research in this area has confirmed that behavior can be a direct result of perceived levels of responsibility and attached emotions.

Because people are driven to make sense of the world, they tend to assign causal relationships between actions and actors whenever possible, despite insufficient evidence. Two distinctive directions of attribution can be distinguished – internal attribution and external attribution (Heider, 1958). Internal attribution refers to finding the cause of an action among internal characteristics, rather than outside factors. For example, one may believe that s/he finished a doctoral degree (behavior) due to certain personality characteristics, such as persistence and passion (internal attribution). On the other hand, external attribution is the process of assigning responsibility and control for an action elsewhere. In this case, one may believe that s/he finished a doctoral degree (behavior) due to outside circumstances, such as a helpful dissertation committee, a benevolent higher power, or simply, luck. Clearly, each example is indicative not only of levels of

responsibility, but also alludes to both positive and negative emotions that may arise with each belief, which further stimulates action or inaction according to attribution theory.

This exact principle has been investigated in the context of the public discourse on health. Cultural factors in the Western sphere often lead to an over-emphasis on personal, internal responsibility for health, such that public discourse neglects other, external causes for poor health (Kim & Willis, 2007). Most dominantly investigated in the context of obesity, news stories on obesity in the U.S. tend to overemphasize the overweight person's control over their problem (i.e., obesity) and solution (i.e., lose weight), thereby cuing feelings of responsibility. Research, however, has pointed out that emotions play a crucial role in the perception of responsibility and resulting actions, especially for highly stigmatized health conditions. Unfortunately, instead of motivating an overweight person to engage in positive health behaviors, perceptions of internal responsibility often lead to negative feelings of shame and self-blame, which further perpetuates the cycle of negative coping behaviors and poor overall health (Puhl & Heuer, 2010). Depictions of similarly stigmatized health conditions, such as mental illness, could also cue feelings of internal responsibility. A large body of literature has investigated the public stigma of mental illness and resulting discrimination toward people who suffer from mental illness. Such public stigma, which refers to the prejudice and stereotypes toward people with mental illness in the general population, often leads to negative self-stigma, which is prejudice and stereotypes turned inward among those who suffer from mental illness (Corrigan et al., 2012; Corrigan & Watson, 2002). Western ideas and beliefs about the pursuit of happiness are based on principles of

positive psychology (Seligman & Csikszentmihalyi, 2014). Such beliefs once again highlight a person's control and responsibility over their happiness, which suggests that one can willingly choose optimism over negative thoughts and feelings. Public stigma, then, is often centered on the idea that people who suffer from depression are unable, or unwilling, to simply view the world and themselves in a more positive light. Standing in clear contrast to contradictory evidence, which points to various risk factors for depression that lie outside of personal control, such depictions are detrimental to health messages that encourage health behaviors for those who suffer from depression.

Since depression in particular is marked by feelings of negativity and inadequacy, disclosure of a mental illness and resulting negative feedback often perpetuates this negative self image, leading to further exclusion and isolation, potential worsening of symptoms, and, most importantly, lack or delay of professional health care (Corrigan & Kleinlein, 2005; Corrigan, Druss, & Perlick, 2014). One promising strategy for health messages encouraging help-seeking for depression is to frame the content in light of the negative feelings of responsibility and control. For example, it is plausible that attempting to reduce a depressed person's feelings of responsibility for the disorder could prompt more positive feelings toward discussing symptoms with a health professional. Thus far, only one study has applied the principles of responsibility framing to depression help-seeking messages. Lienemann, Siegel, and Crano (2013) investigated the role of self-stigma in depression help-seeking messages. The researchers found that messages framed as low in responsibility (e.g., "You are not to blame for your depression") created negative unintended effects among depressed college students. Interestingly, when viewing a depression help-seeking message that attempted to reduce feelings of

responsibility and control over depression, depressed people showed higher levels of negative self stigma and were less likely to intent to seek professional help than those who saw a message unrelated to depression and help-seeking. Due to the scarcity of research for health message responsibility framing for help-seeking for depression, more research is needed in order to explain how people who suffer from depression interpret responsibility framing.

Clearly, due to the negative thinking and feeling that responsibility framing may activate among individuals with stigmatized health conditions such as depression, it is further plausible that including linguistic properties, such as positivity and negativity, in framing strategies of a health messages may further influence the persuasion process among those who suffer from depression.

**Gain-and loss framing.** Gain-and loss framing is a specific sub-area of framing research. Gain-and loss framing principles connect seamlessly with the empirical questions related to how clinical depression influences message processing, because it focuses on the persuasive advantages of positivity (gain frame) and negativity (loss frame) in framing a health behavior such as help-seeking.

Gain-and loss framing operates under the assumption that emphasizing either the benefits of adopting a health behavior or the costs of failing to adopt the health behavior can significantly influence message effectiveness (Rothman, Kelly, Hertel, & Salovey, 2003; Rothman & Salovey, 1997; Rothman, Stark, & Salovey, 2006). Rothman et al. (2006) distinguish between gain-frame appeals (e.g., “There are many benefits, or good things, you may experience if you get tested for HIV,” p. S204) and loss-frame appeals (e.g., “There are many problems, or bad things, you may experience if you do not get

tested for HIV,” p. S204). Whereas gain frames emphasize the good things that will happen if behavior adoption occurs and loss frames indicate the bad things that will happen if behavior adoption does not occur, gain-frame statements can also refer to bad things that will not happen (e.g., “There are many problems, or bad things, you may not experience if you get tested for HIV,” Rothman et al., 2006, p. S204). Similarly, loss-frame statements can also refer to good things that will not happen (e.g., “There are many benefits, or good things, you may not experience if you do not get tested for HIV,” p. S204). Thus, a gain frame can include references to negative outcomes that can be avoided and loss frames can include positive references that will not occur.

Rooted in Tversky and Kahneman’s prospect theory (1979), hypotheses have been tested regarding the relative effectiveness of gain versus loss-framed statements in health messages. Tversky and Kahneman (1979) discovered that when choosing between behaviors, individuals tend to be risk-averse when considering the gains, or positive outcomes of behavioral choices, and risk-seeking when considering losses, or negative outcomes of behavioral choices. Perceived risk in this context is understood in terms of how certain or uncertain (risky) an outcome is perceived to be.

Health messages promote a variety of health behaviors that differ in levels of perceived risk. For example, getting tested for sexually transmitted disease when one has engaged in risky sexual behaviors carries a higher level of risk than receiving a flu shot prior to the peak of flu season. Because health behaviors differ so greatly in levels of perceived risk, different framing techniques have been tested in regard to their persuasive advantage.

The aspect of perceived risk is associated with behaviors that imply either a detection behavior (e.g., screening for disease, such as breast cancer screening), or a prevention behavior (e.g., health behaviors that prevent disease, such as sun screen use) (Rothman et al., 2006). For loss frames that highlight the negative outcomes, or the positive outcomes that will not occur, a higher perceived risk may translate into negative emotions, even anxiety, because the individual will believe that a negative outcome is possible. Health messages encouraging screening behaviors often induce levels of perceived risk relating to whether a negative health condition (e.g., breast cancer) will be detected. Pairing this message with a loss frame would suggest higher effectiveness, since individuals are believed to be more willing to take such risks, because losses, or negative outcomes are salient (Rothman et al., 2006). Similarly, health messages encouraging preventive behaviors (e.g., sun screen use) with gain frames may be more persuasive, since the gains, or positive outcomes of retaining one's health are highlighted in the message (Rothman & Salovey, 1997; Rothman et al., 2003).

Certain components of gain-and loss framing research in health communication are still not fully understood. For example, whereas the existing research uses certain health behaviors as targets (e.g., breast cancer screening, sun screen use, flossing, and others), it is unclear whether all health behaviors clearly map onto the detection and prevention dimensions. In fact, researchers have challenged the assertion that there are strong differences in effectiveness when pairing prevention or detection behavioral targets with gain and loss frames in health messages (O'Keefe & Jensen, 2007; O'Keefe & Naan, 2012). In a comprehensive meta-analysis of 93 studies on gain- and loss framing, O'Keefe and Jensen (2007) did find a slight persuasive advantage for promoting

dental hygiene behaviors such as dental flossing, a prevention behavior, with gain frames. It is important to note that this effect was small and could only be found for this particular prevention behavior and not for any others, such as diet/nutrition, safer sex, skin cancer, smoking, and others. Similar effects could not be found for the purported advantage of combining detection behavior with loss frames.

In response to this finding, researchers have re-investigated the notion of risk, and how this concept forms the basis for the detection and prevention behavior categorization. It is plausible that the certain behaviors differ from others in systematic ways, such as it would explain the slight persuasive advantage of gain frames when paired with dental hygiene behaviors. Re-investigating the origins of gain-and loss framing in prospect theory (Tversky & Kahneman, 1981), O'Keefe and Jensen (2007) stress that a risky behavior is not one that is associated with desirability or dangerousness. For example, jumping out of plane carries a high level of outcome certainty. According to the authors, this behavior would not be considered risky, because the outcome is not uncertain, and would therefore not be considered a detection behavior. Challenging both the notion of risk and how it is connected to message framing also raises important questions about how behaviors interact with certain framing appeals, indicating a stronger need to understand the underlying mechanisms of behavior construal and message processing.

The lack of clear understanding about how certain health behaviors are construed, and how this construal on the side of the message recipient interacts with health message framing is the basis for the current inquiry. Whereas certain previously categorized detection behaviors such as breast cancer screening indicate an intuitively clear detection

mindset (e.g., to detect disease) and prevention behaviors such as sunscreen use indicate a relatively clear prevention mindset (e.g., to prevent disease), other health behaviors are much more difficult to categorize. Another possibility that has been suggested by O’Keefe and Jensen (2007) is that certain behaviors could contain both detection and prevention components. Furthermore, research must uncover whether certain message appeals prime detection or prevention mindsets on the side of the viewer and how much of those cues are present within any given message – essential questions that further complicates the categorization of behaviors and corresponding framing appeals.

Rothman and others (2006) point to the function of the health behavior as important determinant of whether a health behavior is construed as prevention or detection behavior. Such functions can certainly be incorporated in the health message itself. For example, regularly gargling with mouth rinse could be promoted by suggesting that this behavior prevents the buildup of dental plaque (i.e., prevention behavior), or, conversely, it could be promoted by suggesting that it detects the buildup of dental plaque (i.e. detection behavior). Underscoring the effectiveness of gain-and loss framing as dependent on the function of the behavior, it has been found that gain frames are more effective when the function of the behavior is depicted as prevention, whereas loss frames are more effective when the function of the behavior is depicted as detection (Rothman et al., 1999). Whereas the function of a behavior can be primed in health messages, gain-and loss principles still leave room for the individual’s construal of the behavior, which is a crucial question to investigate.

Since previous investigations have focused on health behaviors that can be mapped onto the detection (e.g., screening for disease) and prevention (e.g., sunscreen use and flossing) with relative ease and consensus, each behavior construal carries a certain amount of variance that has largely been ignored and treated as error variance. Rothman and colleagues (2006) raise a number of possibilities that may influence whether individuals construe even agreed upon functions of behaviors differently, such as personality (e.g., optimism), lack of experience with behavior, confidence in one's health status, and many others. These possibilities lead to the conclusion that "there is variability across people in how any given behavior is construed [which means] that the effectiveness of gain-versus loss-framed messages will vary" (Rothman et al., 2006, p. S209).

One driving mechanism that influences behavior construal is perceived risk. Previous studies have found that only women who perceive themselves to be at risk for breast cancer actually perceived breast self-examinations as detection behavior, making a loss-framed message promoting breast self-examinations more effective (Meyerowitz, Wilson, & Chaiken, 1991). Other findings supported this conclusion, while also suggesting an advantage of gain-framed appeals for those who do not perceive themselves to be at risk for a health condition (Apanovitch et al., 2003; Rothman, Pronin, & Salovey, 1996). Other influencing factors relate to potential beliefs that detection behaviors could lead to the detection of health benefits, as well as perceived effectiveness of prevention behaviors in successfully preventing disease. These variations may reverse predictions about persuasive advantages of gain-versus loss-framing (Bartels, Elo, & Rothman, 2004; Croyle & Ditto, 1990).

Focusing on mental illness, and more specifically professional help-seeking for depression, as an example of these unanswered questions, it is unclear whether this health behavior would cue a detection or a prevention mindset. For some, it could be argued that professional help-seeking would activate a detection mindset due to increased levels of risk, because a visit with a mental health professional might result in an official diagnosis of depression, which may be anticipated by an individual aware of symptomatology and assessment. For another individual, however, professional help-seeking for depression could signal a prevention mindset due to lower levels of perceived risk, because help-seeking ultimately prevents the worsening of symptoms. It is also not fully understood how the mere perception of risk for this health behavior connects with information processing biases influenced by depression.

Furthermore, depression might reverse the previously established, but recently questioned, persuasive advantages of both gain-and loss framing for detection and prevention behaviors. It is plausible that no matter the perceived degree of risk in a health behavior, depressed individuals might process gain-framed and loss-framed health information in systematically different ways than non-depressed individuals. Similarly, it is important to know if depressed and non-depressed individuals do not differ in the construal of help-seeking behavior (e.g., detection or prevention behavior). Because message tailoring is of utmost importance for ultimate message effectiveness (Rimer & Kreuter, 2006), it is crucial that research sheds light on how the persuasive advantage of gain-and loss frames for depression help-seeking messages targeting those who are depressed.

The fact that no strong difference could be found for the combination of detection and prevention behaviors with gain-and loss frames for a wide range of behaviors (O’Keefe & Jensen, 2007; O’Keefe & Naan, 2012) raises important questions and ultimately challenges previous findings, concluding that “sufficient research evidence has been accumulated to make it clear that one cannot expect that using a gain-framed appeal rather than a loss-framed appeal will make much difference to the success of such messages” (O’Keefe & Jensen, 2007, p. 634). Current investigations in gain-and loss framing research have therefore moved away from anticipating strong effects for message frame alone, and have instead moved to the exploration of potential moderators, such as individual differences. To date, however, no research has explored the moderating role of depressed cognition in shaping effects of gain-and loss framing techniques for depression help-seeking messages.

In sum, combining the reasoned action framework with framing theory is useful to inform depression help-seeking message content and design, because message features have significant effects on persuasion (Dillard & Pfau, 2002). With the common goal of investigating persuasion, communication research and psychology conceptually differ in approaches. Despite conceptual differences, one must consider the psychological mechanisms as a basis for the persuasive effects of health messages (Burlinson, 1992; Shen & Bigsby, 2013).

With the goal of promoting help-seeking for depression, both message content (informed by the reasoned action framework) and message design (informed by communication theory) must be created specifically for those who are affected by depression. Because depression, a mental and emotional disorder, likely influences the

ways in which people engage with health messages, a thorough understanding of this particular disorder is crucial. The current investigation therefore incorporates insights from psychology about depression and how it could affect interactions with health messages in order to inform message content and design of depression help-seeking messages.

## **The Health Communication Perspective**

### **The Importance of Health Message Tailoring**

Health communication, as an intervention tool, has the potential to encourage behavior change (CDC, 2011), such as help-seeking among those who suffer from mental illness. Due to the ubiquity of communication and its central role in “sharing meaning” (Carey, 1989; Rimal & Lapinski, 2009, para. 2), health communication scholars have emphasized the importance of targeting and tailoring health messages to intended audiences. A health message is targeted when it is created with a certain segment of the population in mind (Kreuter & Wray, 2003; Rimal & Adkins, 2003), whereas tailoring refers to “any combination of strategies and information intended to reach one specific person, based on characteristics that are unique to that person, related to the outcome of interest, and derived from an individual assessment” (Kreuter, Farrell, et al., 2000, p. 277). Rimer and Kreuter (2006) state that tailoring can occur in terms of matching the content of the health message to the individual’s needs and interests, frame this content appropriately and embed it into a meaningful context, employ a message design that captures attention and reduce potential barriers by choosing amount, type, and channels that are preferred by the individual.

Health communication tailoring has gained particular importance for health interventions due to a vast majority of studies indicating higher effectiveness than generic messages (Kreuter & Wray, 2003; Kroeze, Werkman, & Brug, 2006; Revere & Dunbar, 2001; Rimer & Glassman, 1999; Skinner et al., 1999). In a meta-analytic review of forty studies comparing a tailored message with a comparison message, Noar, Benac, & Harris (2007) found that tailored messages were more effective in igniting health behavior change than comparison messages. Drawing together their findings and theoretical explanations, the authors conclude that the “tailored messages have the advantage of being customized to individuals to increase the chances that the message will be viewed as personally relevant” (p. 684), and therefore enabling persuasion to take place.

Previous findings on the advantages of tailored health communication has led to investigations of the so-called “black box” of persuasion (Noar, Benac, & Harris, 2007, p. 684), or the underlying mechanisms of persuasion relevant to the unique individual, so that the positive effects of message tailoring can be maximized. Because tailoring is an approach in which information about specific individuals related to a given health outcome are used to determine the most useful health communication strategies based on individual needs (Rimer & Kreuter, 2006), we must seek to understand the population of interest prior to the creation and implementation of health communication interventions.

### **Depression and Health Communication**

Multiple mental health stigma campaigns have been launched in a systematic manner, such as SAMHSA’s project to counteract prejudice and discrimination against

mental illness.<sup>3</sup> Various studies have empirically investigated mental health stigma as a barrier to help-seeking behavior (Chandra & Minkovitz, 2006; Corrigan, 2004; Gulliver, Griffiths, & Christensen, 2010) and as an influencing factor in boomerang effects (Corrigan, 2004; Lienemann, Siegel, & Crano, 2013; Vogel, Wade, & Haake, 2006).

While mental health intervention efforts are being launched across the nation, published studies evaluating their effectiveness cannot be found in the traditional search literature, such as PsycINFO, Google Scholar, and PubMed (Corrigan, 2012).

What may lie at the heart of the issue is the inherent difference between mental health illness and other health concerns, which first need to be addressed in order to understand the key aspects of the target audience. Discrete goals of other health messages, such as antismoking efforts (i.e. ‘stop cigarette smoking’), and breast cancer awareness (i.e. ‘get tested for breast cancer’) are less difficult to communicate and evaluate.

Ideally, strategic health messages modify attitudes and behavior by raising awareness about specific issues and communicating key information (Klimes-Dougan & Lee, 2010). Rimer and Kreuter (2006) argue that tailored health communication combines information and behavior change strategies and directs it toward a specific audience based on their unique features. Health communication efforts therefore need to understand the audiences’ needs and characteristics and tailor health messages accordingly.

Based on the review of the health and persuasion literature, as well as a review of anti-stigma and help seeking campaigns, it is evident that depression, as a health concern,

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<sup>3</sup> For other efforts, see [www.promoteacceptance.samhsa.gov](http://www.promoteacceptance.samhsa.gov), [www.bringchange2mind.com](http://www.bringchange2mind.com), and [www.halfofus.com](http://www.halfofus.com).

objective of research, as well as target of health communication efforts, is distinct from other health concerns and therefore requires a unique approach for the design of help seeking messages in strategic health communication.

However, a review of relevant literature indicates a gap in the knowledge about the unique cognitive processes underlying depression. Without this knowledge, health communication cannot be tailored effectively according to the audience's unique characteristics and needs. This knowledge is crucial for strategic health communication practitioners and scholars who seek effective ways to increase help-seeking behaviors for college students who suffer from depression (Lienemann, Siegel, & Crano, 2013). The present research therefore aims to understand if and how cognitive processes influenced by symptoms of depression (cognitive biases) take place upon exposure to depression help-seeking messages, so that health communication efforts can be more strategic and effective in the ultimate goal of motivating students with depression to seek the help they need.

### **Purpose and Overview of Dissertation Studies**

The over-arching goal of the present research is to integrate the psychology research with communication science in order to inform principled message design that may contribute to the betterment of a major public health issue – the lack of help-seeking for depression. In order to accomplish this goal, the two discrete objectives of the multiple studies presented next were to 1) identify the determinants of intentions to seek help among college students and 2) to test the two framing techniques most relevant for depressed cognition, namely responsibility and gain-versus loss-framing, and determine their relative effectiveness in promoting help-seeking for depression among college students. Results will guide choices for both the content, as well as the design, of depression help-seeking messages. In addressing whether and how depression influences information processing, this research further draws conclusions about the applicability of existing theoretical predictions and need for new research directions.

First, given that mental illness and depression in particular influences a larger proportion of the population than ever before, the normative standard of a message audience unaffected by various cognitive and emotional disorders becomes an elusive and solely conceptually driven group. Information processing that deviates from this norm has mostly been treated as error variance and ignored for theoretical testing. In order to inform general health messaging that will continue to involve a larger proportion of individuals, as well as depression help-seeking messages in particular, which seek to directly target those who suffer from depression, the present research will shed light on

whether this error variance exists and what that implications are for persuasion theory and practice relevant for depression help-seeking messages.

In examining the entirety of the persuasion process, namely attention, interpretation, and memory, this study investigates how determinants of help-seeking for depression among college students interact with depressed cognition and message framing. With this multi-method research, which employs both self-report and eye-tracking measures, results will not only indicate if depressed cognition influences information processing of depression help-seeking message content and design, but it will also suggest at what stage such influence takes place.

Ultimately, in order to avoid unintended negative effects of message strategies that have recently shown to occur in populations affected by depression, this research seeks to investigate whether current theoretical predictions can be applied to such populations and further adds novel practical and theoretical insights regarding effective message content and design.

## CHAPTER II

### STUDY 1: EXPLAINING INTENTIONS TO SEEK HELP FOR DEPRESSIVE SYMPTOMS IN THE CONTEXT OF RESPONSIBILITY MESSAGE FRAMING

#### Introduction and Research Questions

Depression is the strongest risk factor for suicide—the second leading cause of death among 15-24 year olds (CDC, 2012). In the U.S., depression is a particularly significant problem among college students. In terms of prevalence, for example, 30% of college students had felt symptoms of depression in the previous year so severe that it was “difficult to function” (ACHA, 2011, p. 14). The National Institute of Mental Health (2005) further indicates that most individuals experience the first symptoms of depression during their college years, which presents both a challenge and an opportunity for health professionals to reach a large number of depressed individuals at an important stage of their life.

Tragically, however, whereas people are likely to seek help when symptoms of a physical affliction become more severe, people affected by depression are less likely to seek help when their depressive symptoms become more severe (Christensen et al., 2006; Keeler et al., 2013, Lienemann & Siegel, 2015). For example, it has been estimated that only 24 percent of college students diagnosed with depression were receiving treatment (ACHA, 2012). Similarly, Eisenberg, Golberstein and Gollust (2007) found that of students who screened positive for depression or anxiety, up to 84 percent did not receive treatment.

Clearly then, improving help-seeking among students who suffer from depression is an important issue (NAMI, 2012). From a health communication perspective, two questions are of particular importance: What are the factors that explain seeking help for depression, and next, how do health messages affect those factors? Unfortunately, very little work has been done on depression-related behavior in the context of health messages (for important exceptions see Klimes-Dougan & Lee, 2010; Lienemann, Siegel, & Crano, 2013). We therefore do not know how to effectively use messages to support help-seeking among depressed college students. To advance understanding of these questions, a reasoned action approach was used to explain intention to seek help for depression (Fishbein & Ajzen, 2010). The current study also tested whether the factors that explain help-seeking intention are shaped by health messages that differ in how they frame depression and help-seeking.

Reasoned action theory has seen a sequence of reformulations that build on another in a developmental fashion, i.e., the theory of reasoned action (Fishbein & Ajzen, 1975), the theory of planned behavior (Ajzen, 1985), the integrative model of behavioral prediction (Fishbein, 2000), and its current formulation, the reasoned action approach to explaining and changing behavior (Fishbein & Ajzen, 2010). The general tenet of reasoned action theory is that a limited set of variables can account for any human behavior. Applied to depression, reasoned action theory suggests that seeking help for depression can be predicted from the intention to seek help if no environmental constraints thwart behavioral performance and people possess the actual skills required to seek help. Intention is a function of attitudes, perceived norms and perceptions of control regarding seeking help. Those three factors have two dimensions each (Fishbein & Ajzen,

2010; Yzer et al., 2015). Attitude is the individual's evaluation of his or her own help-seeking. It includes instrumental attitude (the evaluation of help-seeking in terms of positive or negative attributes, such as "foolish" or "wise") and experiential attitude (the evaluation of help-seeking in terms of positive or negative affective experiences, such as "pleasant" or "unpleasant"). Perceived norm is the extent to which an individual expects normative pressure for or against his or her own help-seeking and includes injunctive norm (the extent to which important referents are expected to approve or disapprove the individuals help-seeking) and descriptive norms (the extent to which important referents seek help themselves). Perceived behavioral control is the extent to which an individual expects that he or she can successfully seek help. It includes perceived capacity (the perceived ability to seek help) and perceived autonomy (the extent to which the decision to seek help is perceived to be up to the individual).

Findings from a reasoned action approach can inform whether intervention messages should address attitudinal, normative and/or control beliefs, but they cannot inform what a message should look like (Fishbein & Yzer, 2003). Fishbein and Ajzen (2010) therefore call for complementing the reasoned action approach with theoretical perspectives on message effects. One such perspective that is particularly relevant for depression is framing. In an effort to increase the effectiveness of theory-based health communication strategies, researchers have focused on the effects of how health messages are framed. The premise of such framing research is that although a message may essentially contain the same information, framing such information in different ways can lead to distinctly different outcomes. A message can be framed based on a large number of dimensions. The focus of the current study is on message framing in terms of

low responsibility for depression. Depression can lead people to overestimate the extent to which they are responsible for their depressive symptoms, which makes the question whether messages that have low responsibility cues could be effective particularly important to address.

There is evidence that low responsibility messages targeting those affected by depressive symptoms may create unintended negative effects (so called boomerang effects), such that after exposure to certain help-seeking messages intention to seek help decreased (Lienemann, Siegel, & Crano, 2013). Specifically, Lienemann and colleagues (2013) found boomerang effects when testing the effects of a message that included a low responsibility cue (“You are not to blame for the cause of your depression. Depression is treatable if you are willing to seek help”) compared to a control message. For example, exposure to a message with a low responsibility cue increased self-stigma of seeking help among people with elevated depressive symptoms, which then negatively influenced intentions to seek help. Thus, even if a message explicitly states that people are not responsible for their depressive symptoms, the mere mentioning of responsibility apparently can lead to adverse effects.

Interestingly, such depressive thinking stands in complete contrast to research conducted with individuals not affected by depression, who tend to operate on internal positive characteristics in order to maintain self-esteem. Boomerang effects are therefore plausible if help-seeking messages are not effectively tailored to those suffering from depression. It is reasonable to presume promising effects for messages that avoid low responsibility framing completely. The dilemma of communicating the individual’s

agency in improving mental health by seeking help, while also avoiding attributing causal responsibility to the individual for feeling depressed becomes clear.

The current study seeks to probe deeper into the role of responsibility cues in help-seeking messages in shaping help-seeking intention and its determinants.

Specifically, 1) the determinants of the intention to seek help for depressive symptoms and 2) the effects of three help-seeking messages that differ in the responsibility cues were tested in the context of help-seeking intention and its determinants.

## **Method**

### **Study Design and Procedure**

Participants were recruited through the departmental subject pool at the University of Minnesota and received course credit in exchange for study participation. The university's institutional review board granted approval for this study. 270 participants provided consent to participate in the study. Eleven cases were excluded from analyses, because participants terminated their participation before message exposure. ). The final sample included 259 undergraduate students aged 18-32 years ( $M = 20.13$ ,  $SD = 1.83$ ). Of the 259 participants, 66.4% were female; 98.1% were not married; 81.1% were White, and 90.7% were born in the U.S. Participants were composed of freshmen (15.1%), sophomores (27.8%), juniors (37.1%), and seniors (18.5%). The majority of participants reported that they had never been diagnosed with depression (85.3%) and that they were not currently receiving counseling or therapy (91.5%). Using standard PhQ-9 depression categorization criteria (see Measures section for more details), 74% of participants showed no to mild depressive symptoms, while 26% of participants showed moderate to severe depressive symptoms. Lienemann et al. (2013) found similar

distributions of depressive symptoms in a sample of college students; in their research 80% of participants showed no to mild depressive symptoms and 20% of participants showed moderate to severe depressive symptoms. Depressive symptoms correlated very weakly with intention to seek help ( $r = -.08, p = .23$ ), which stands in contrast with previous findings. After excluding two outliers displaying unusually high levels of depression, however, the associations between depression and reasoned action variables changed significantly. Final analyses were therefore conducted with the exclusion of these two cases.

The study was designed as an online experiment with message framing (low responsibility cues; no responsibility cues; information only) as a between-subjects factor. Participants filled out questions about the extent to which they experienced depressive symptoms. Next, they saw one of three messages: one group was exposed to a low responsibility message ( $n = 86$ ), one group was exposed to an no responsibility message ( $n = 90$ ), and one group was exposed to an information only message ( $n = 83$ ).

### **Experimental Stimuli**

Messages were created based on the responsibility framework put forth by Brickman et al. (1982). A key component of the framework is the association between individuals' perceived responsibility for a problem and the perceived responsibility for solving the problem. Similar to the sentiment "You are not responsible for being down, but you are responsible for getting up," a low responsibility message was designed to encourage help-seeking among those who suffer from depressive symptoms. The low responsibility message read, "You are not to blame for your depression. Depression is common but treatable. Reach out for help if you have experienced: -persistent sad mood,

-feelings of hopelessness, -decreased energy, -thoughts of suicide, and/or, -problems sleeping. For information: [University of Minnesota Mental Health website].

To further test variations of responsibility framing, a no responsibility message was created that read, “Depression is common but treatable. Reach out for help if you have experienced: -persistent sad mood, -feelings of hopelessness, -decreased energy, -thoughts of suicide, and/or, -problems sleeping. For information: [University of Minnesota Mental Health website]” and an information only message that read: “Mental Health Clinic. Up to eleven counseling visits per 12-month period are offered. Options include: -individual and couple counseling/psychotherapy, -a variety of group therapies, -social work assistance, and/or, -chemical health assessment and treatment. For information: [University of Minnesota Mental Health website] (see figures 2-4 for messages).



**Mental Health  
Clinic**

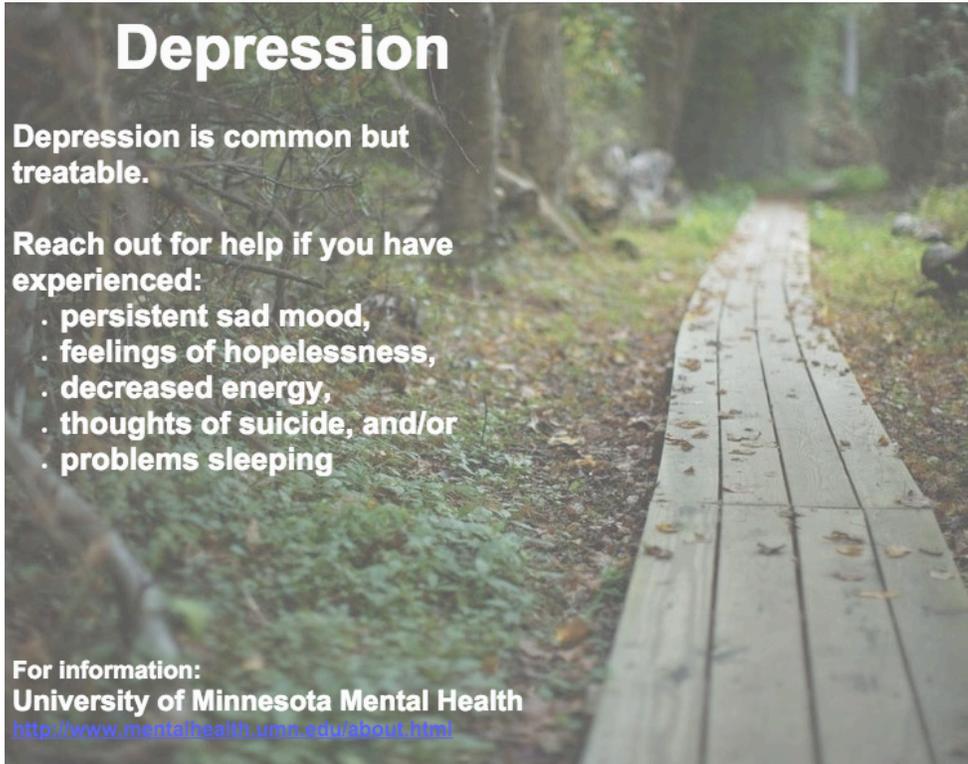
**Up to eleven counseling visits per  
12-month period are offered.**

**Options include:**

- . individual and couple  
counseling/psychotherapy,
- . urgent consultation,
- . a variety of group therapies,
- . social work assistance, and/or
- . chemical health assessment and  
treatment

**For information:  
University of Minnesota Mental Health**  
<http://www.mentalhealth.umn.edu/about.html>

*Figure 2:* Information only message.



**Depression**

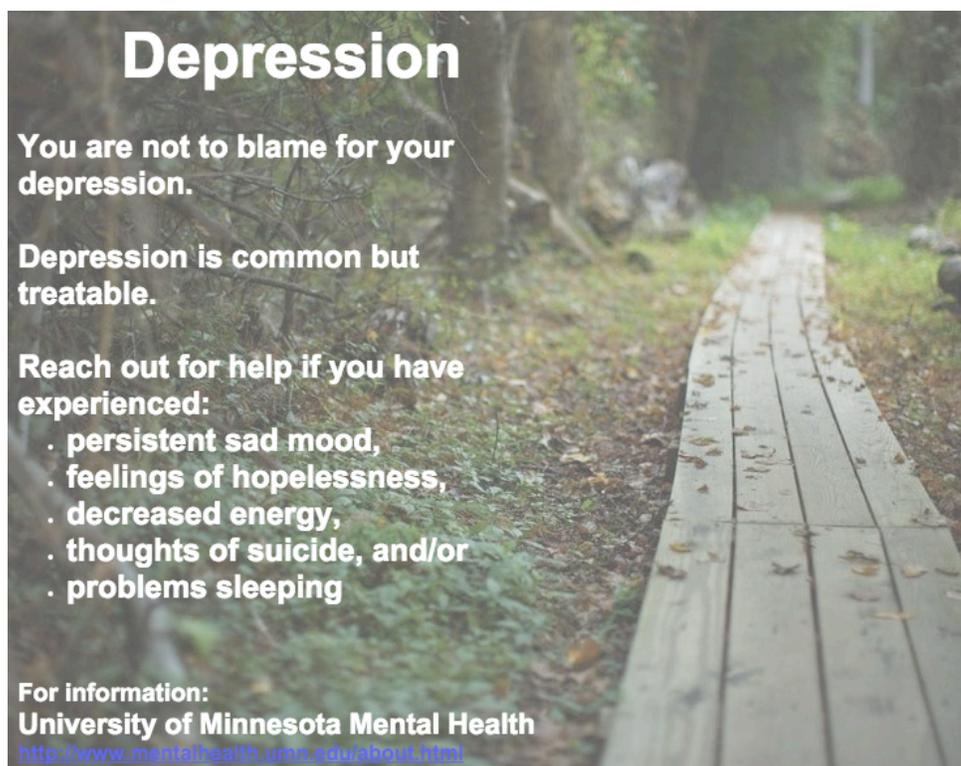
**Depression is common but treatable.**

**Reach out for help if you have experienced:**

- . persistent sad mood,
- . feelings of hopelessness,
- . decreased energy,
- . thoughts of suicide, and/or
- . problems sleeping

**For information:**  
**University of Minnesota Mental Health**  
<http://www.mentalhealth.umn.edu/about.html>

*Figure 3:* No responsibility message.



*Figure 4:* Low responsibility message.

## Measures

All respondents completed a pre-questionnaire (assessing depressive symptoms) and after message exposure, a post-questionnaire (including the reasoned action measures). Measures relevant to the current analyses are described below.

**Reasoned action variables.** Reasoned action variables were measured consistent with theory and measurement recommendations (Fishbein & Ajzen, 2010; Yzer et al., 2015). Due to the nature of the sample, which consistent of both non-depressed and depressed individuals, the reasoned action variables were adapted to increase relevance for those who are currently not suffering from depression by inducing imaginary scenarios (e.g., “if I were to experience depressive symptoms”). The target behavior was phrased as “seeking professional help on campus if you were to experience depressive

symptoms this fall semester 2014”. *Intention* was measured by asking participants “How likely is it that you will make an appointment with a health professional on campus to discuss depressive symptoms if you were to experience depressive symptoms this fall semester 2014” (1=very unlikely, 7=very likely) and respond to the statement “I expect to make an appointment with a health professional on campus to discuss depressive symptoms if I were to experience depressive symptoms this fall semester 2014” (1=very unlikely, 7=very likely). The intention items correlated strongly,  $r = .795$ . Item scores were averaged to form a behavioral intention scale.

Five seven-point semantic differential items measured instrumental and experiential *attitude*. The stem “My making an appointment with a health professional on campus to discuss depressive symptoms if I were to experience depressive symptoms this fall semester 2014 would be...” was followed by the items *bad - good, harmful - beneficial, unnecessary - necessary* (for instrumental attitude), and *not enjoyable - enjoyable, stressful - relaxing* (for experiential attitude). Scores on the two sets of items were averaged to yield indicators of instrumental attitude,  $\alpha = .82$ , and experiential attitude,  $r = .63$ .

*Perceived norms* were assessed on seven-point scales. An injunctive norm measure asked participants “How do you think most people important to you would feel about you making an appointment with a health professional on campus to discuss depressive symptoms if you were to experience depressive symptoms this fall semester 2014?” Scale anchors ranged from strongly disapprove to strongly approve. Descriptive norms was measures with the question, “How many of the people important to you on campus who struggle with emotional and psychological problems do you think will make

an appointment with a health professional on campus to discuss depressive symptoms this fall semester 2014?” Scale anchors ranged from almost none to almost all.

The *perceived behavioral control* measure also used seven-point scales. Perceived behavioral control was measured with the question, “There can be a variety of obstacles to your making an appointment with a health professional on campus to discuss depressive symptoms this fall semester 2014. Even in the face of such obstacles, how sure are you that if you really wanted to, you could make an appointment with a health professional on campus to discuss depressive symptoms if you were to experience depressive symptoms this fall semester 2014?” Two semantic differentials for perceived autonomy were used. The stem “My making an appointment with a health professional on campus to discuss depressive symptoms if I were to experience depressive symptoms this fall semester 2014 would be” was followed by the items *not under my control* – *under my control* and *not up to me* – *up to me*. A perceived autonomy scale was computed by averaging these two items,  $r = .67$ .

**Depression.** The Patient Health Questionnaire-9 (PhQ-9), a well-established, clinical measure to assess depressive symptoms and severity, was used to measure depressive symptomatology. The PhQ-9 consists of nine items. Participants indicated how often (0 = not at all; 3 = nearly every day) they had been bothered by specific depressive symptoms over the last two weeks. Description of depressive symptoms is based on the nine DSM-IV criteria for depression (e.g., “Little interest or pleasure in doing things” and “Feeling down, depressed, or hopeless”). The sum of all PhQ-9 items indicates the severity of depression (possible scores range from 0-27). If categorized, a score of 1-4 indicates minimal depressive symptoms, 5-9 indicates mild depressive

symptoms, 10-14 indicates moderate depressive symptoms, 15-19 indicates moderately severe depressive symptoms, and 20-27 indicates severe depressive symptoms (American Psychiatric Association, n.d.). For analyses purposes the scale was left as continuous, with higher scores reflecting greater severity of depressive symptoms.

**Perceived framing of responsibility.** Perceptions of responsibility framing were assessed by asking “Please rate your level of agreement with the following statement about the message you saw. The message stated that individuals are not to blame for the cause of the problem discussed in the message.” Scale anchors ranged from “strongly disagree” (1) to “strongly agree” (5).

## Results

### Preliminary Analyses

**Random assignment and manipulation check.** Random assignment was successful; individuals who were assigned to the low responsibility framing group, no responsibility framing group, and information only message group did not differ in age, exposure to mental health messages, attention to mental health messages, depressive symptoms, sex, student status, race/ethnicity, marital status, nationality, and self-reported honesty with which questions were answered.

Furthermore, analysis of variance revealed that as expected the framing of responsibility was perceived differently across message conditions,  $F(2, 256) = 16.81, p < .001$ , partial  $\eta^2 = .12$ . Tukey post-hoc analyses showed that the low responsibility condition ( $M = 4.04, SD = 1.12$ ) was statistically significantly different from the information only message condition ( $M = 3.12, SD = .11$ ) and the no responsibility condition ( $M = 3.48, SD = 1.09$ ) regarding agreement with the perceived responsibility

measure. The information only message condition and no responsibility conditions did not differ from each other. Thus, the responsibility manipulation was successful.

**Descriptive statistics across experimental groups.** In accordance with reasoned action theory, experiential and instrumental attitude, injunctive and descriptive norms, and perceived autonomy and perceived capacity correlated with intention (see Table 2). Overall, participants showed more positive instrumental attitudes ( $M = 4.89$  on a 7-point scale) than experiential attitudes ( $M = 3.58$ ). Whereas participants indicated that most important others would somewhat approve of their making an appointment with a mental health professional for depressive symptoms if needed ( $M = 5.21$ ), they also believed that actually seeking out such help is rare among important others who are struggling with mental health problems ( $M = 2.87$ ). Participants felt somewhat capable ( $M = 5.42$ ) and autonomous ( $M = 5.24$ ) to seek help for depressive symptoms, but also reported weak intentions to do so ( $M = 3.22$ ). Furthermore, depressive symptoms as indicated by PhQ-9 scores were negatively associated with experiential attitudes ( $r = -.17, p = .007$ ), as well as injunctive norms ( $r = -.17, p = .008$ ). Depressive symptoms were negatively correlated with intentions to seek help ( $r = -.14, p = .03$ ), instrumental attitudes ( $r = -.15, p = .02$ ), experiential attitudes ( $r = -.15, p = .02$ ), and injunctive norms ( $r = -.16, p = .01$ ). Due to non-linear effects induced by only two unusual cases in the data set, the two cases were excluded for the subsequent main analyses, as well.

Table 2

*Means, Standard Deviations and Correlations among Key Variables*

	<i>M (SD)</i>	<i>n</i>	BI	I-Att	E-Att	IN	DN	Cap	Aut
PhQ-9	6.51 (5.16)	259	-.14*	-.15*	-.15*	-.16*	.06	-.12	-.08
Behavioral Intention (BI)	3.17 (1.72)	254		.61**	.31**	.26**	.38**	.21**	.21**
Instrumental Attitude (I-Att)	4.89 (1.11)	254			.42**		.23**	.29**	.38**
Experiential Attitude (E-Att)	3.58 (1.13)	254				.11	.18**	.14*	.26**
Injunctive Norm (IN)	5.21 (1.34)	254					.10	.24**	.30**
Descriptive Norm (DN)	2.86 (1.47)	254						.10	.01
Perceived Capacity (Cap)	5.42 (1.54)	254							.28**
Perceived Autonomy (Aut)	5.24 (1.28)	254							

*Note.* PHQ-9 scale range is 0-27. All other means are relative to scales ranging from 1 to

7. \*\*  $p < .01$ .

## Main Analyses

**Explaining help-seeking intention.** The objective here was twofold; one, to test the predictive power of attitudinal, normative and control variables as determinants of intentions to seek help for depressive symptoms, and two, to test whether message exposure affected the predictive power of the of attitudinal, normative and control variables. For this purpose, a moderated regression analysis was conducted to explain help-seeking intention. The first step included two dummy variables that indicated the three experimental groups (Aiken & West, 1991). The second step included main effects of the reasoned action variables. The final step included the interactions between the reasoned action variables and the experimental group variables. Substantive variance explained by the interaction terms would indicate that the extent to which the reasoned action variables explained help-seeking intention differed as a function of the message that participants saw. This was not the case: Exposure to messages that differed in responsibility framing did not affect associations between reasoned action variables and intention,  $R^2$  change = .033,  $F(12, 233) = 1.195$ ,  $p = .287$ . For this reason, only the main effects of the reasoned action variables are reported.

Table 3 shows that the six reasoned action variables explained 42% of the variance in intention to seek help,  $F(8, 245) = 23.94$ ,  $p < .001$ . Intention was primarily a function of instrumental attitude ( $\beta = .53$ ,  $p < .001$ ) and to lesser extent descriptive norms ( $\beta = .24$ ,  $p < .001$ ).

Table 3

*Effects of Attitudinal, Normative and Control Variables on Help-Seeking Intention:*

*Regression Results*

Variable	<i>B</i>	<i>SE B</i>	$\beta$	<i>pr</i>	<i>Adjusted R<sup>2</sup></i>
Experiential Attitude	.08	.08	.05	.06	
Instrumental Attitude	.81	.09	.53**	.49	
Injunctive Norms	.08	.07	.06	.08	
Descriptive Norms	.28	.06	.24**	.29	
Perceived Autonomy	-.04	.07	-.03	-.03	
Perceived Capacity	.03	.06	.02	.03	

.42

*Note: \*\* $p < .01$ .*

**Message effects on reasoned action variables.** To test whether responsibility framing affected mean levels of the reasoned action variables, a multivariate GLM was conducted. Responsibility Framing Messages (information only, no responsibility and low responsibility) was entered as the independent variable and help-seeking intention, experiential attitude, instrumental attitude, injunctive norms, descriptive norms, perceived capacity and perceived autonomy were entered as dependent variables. There was no effect at the multivariate level,  $F(14, 490) = 1.15, p = .27$ , partial  $\eta^2 = .03$  (see table 4).

Table 4

*Mean Levels of Reasoned Action Variables by Message Frame*

Dependent Variable	Message frame		
	Informational	No responsibility	Low responsibility
Intention	3.06	3.15	3.30
Instrumental attitude	4.75	4.76	5.15
Experiential attitude	3.57	3.41	3.76
Injunctive norm	4.99	5.42	5.21
Descriptive norm	2.85	2.88	2.85
Perceived capacity	5.33	5.46	5.46
Perceived autonomy	5.07	5.20	5.43

*Note:* Means reflect 7-point scales.

**The role of depression.** To test whether depression influences message effects, a hierarchical regression analysis was used to regress each of the reasoned action variables on depression and message condition (step 1) and the interaction between depression and message condition (step 2). Depression was left as a continuous measure and used two dummy variables to represent the three message conditions (Aiken & West, 1991). An increase in explained variance by adding the interaction terms would indicate that message effects on the reasoned action variables varied for people who differed in depression.

In the current sample the interaction terms did not add substantially to variance explained in any of the reasoned action variables; intentions to seek help ( $R^2$  change = .000,  $F(2, 248) = .012$ ,  $p = .988$ ), experiential attitude ( $R^2$  change = .016,  $F(2, 248) = 2.09$ ,  $p = .126$ ), instrumental attitude ( $R^2$  change = .009,  $F(2, 248) = 1.252$ ,  $p = .288$ ), injunctive norms ( $R^2$  change = .010,  $F(2, 248) = 1.359$ ,  $p = .259$ ), descriptive norms ( $R^2$  change = .007,  $F(2, 248) = .930$ ,  $p = .396$ ), perceived autonomy ( $R^2$  change = .002,  $F(2, 248) = .201$ ,  $p = .818$ ), and perceived capacity ( $R^2$  change = .020,  $F(2, 248) = 2.548$ ,  $p = .080$ ). Conceivably depression might not influence message effects in a linear fashion. To test this possibility a multivariate GLM approach was used with depression grouping variables based on PhQ-9 categories. Because of unequal sample sizes, depression scores were grouped into minimal ( $n = 118$ , 43.7%), mild ( $n = 74$ ; 27.4%), and moderate to severe depression ( $n = 67$ ; 24.8%), excluding the two outliers discussed previously. None of these analyses showed an interaction effect between depression and message condition on intentions to seek help and determinants,  $F(28, 863) = .96$ ;  $p = .528$ ; partial  $\eta^2 = .03$ . It thus appears that in the current sample, low responsibility cues did not have adverse effects on people severely affected by depression.

### **Discussion**

This study has multiple important implications. Although numerous studies have applied the reasoned action framework to a multitude of behaviors, reasoned action theory has not previously been used to understand help-seeking for depressive symptoms. The theory was tested in a sample of college students – a vulnerable population in which depressive symptoms appear to be most prevalent. Since most work on mental health messages focuses on stigmatized beliefs (Clement et al., 2013; Corrigan et al., 2012;

Evans-Lacko et al., 2012; Pinto-Foltz, Logsdon, & Myers, 2011) that may not be changeable by health promotion messages (Fishbein & Ajzen, 2010), extant research provides very little guidance to the understanding of help-seeking behavior and message content and framing. The current study focused on the determinants of actual intention to seek help, such as attitudes, norms, and perceived capacity, as outlined by the reasoned action approach, which can inform health interventions targeting those who are in need of professional help to cope with depressive symptoms. The investigation of determinants to engage in help-seeking for depressive symptoms provided important and novel findings. First, this study indicates that attitudinal, normative, and control variables account for a substantial proportion of the variance in intention to seek help (42%). This finding underscores the usefulness of the reasoned action framework in the context of health behavior promotion targeting those who struggle with mental illness. Second, the most important determinants underlying intention to seek help were identified— instrumental attitudes and descriptive norms.

If proven to be robust across studies, instrumental attitudes and descriptive norms are promising targets of depression help-seeking messages. Messages can address instrumental attitude by portraying the benefits of help-seeking and its positive effects on current conditions. Descriptive norms are more challenging to address with messages when, as in the current sample, it is believed that other people do not seek help for depressive symptoms either. Perhaps messages can portray other college students who effectively engage in help-seeking for depressive symptoms, but whether such a message can be convincing if depressed students do not see actual people around them seek help is not at all certain.

Findings thus offer insights regarding potentially useful message factors, but also warrant further investigations about how to best address those factors. The reasoned action approach to changing behaviors recommends a belief elicitation study to identify beliefs underlying attitudes, norms, and perceived control (Fishbein & Ajzen, 2010). Such a belief elicitation study would ask participants to write out what positive and negative things they believe would happen if they would seek help for depression, who would or would not be supportive of their help-seeking, and what factors would facilitate or stand in the way of seeking help. Such a study provides deeper insight into what help-seeking means to people, and thus can offer important guidance in message design.

Based on recent work by Lienemann and colleagues (2013) that found boomerang effects of depression help-seeking messages that use responsibility cues, three types of depression help-seeking messages were analyzed (low responsibility, no responsibility, and information only message framing). In predicting message effects on intentions to seek help for depressive symptoms, differences in mean levels and relative importance of determinants for each of the message conditions were expected, especially when splitting the sample based on categories of depression symptoms. The current study did not show any effects for help-seeking messages with different responsibility cues, but there are simply are too few studies on effects of depression help-seeking messages on help-seeking intentions to substantiate conclusions. More work is needed to explain potential boomerang effects of responsibility framing. Such work could usefully test an explanation for boomerang effects of responsibility messages that Lienemann suggested, namely the possibility that responsibility message framing might prime a depressed individual's negative self-schema (Lienemann & Siegel, 2016).

Most important is the overall—across depression scores—low intention to seek help for depression. This set of findings means that when depression symptoms increase, help-seeking decreases and in fact is as low as for people experiencing no or fewer depression symptoms. This is consistent with behavioral research that showed little actual help-seeking among people who are severely affected by depression (e.g., Eisenberg, Golberstein & Gollust, 2007; Keeler et al., 2013). These findings offer more specific evidence that experiencing depression is not a motivator for seeking help, and thus underscores how difficult it is to encourage people to seek help when they experience depression.

The implications of this become clear when considering the negative associations between depression and experiential attitude, depression and instrumental attitude, and between depression and injunctive norms. The negative correlation between depression and experiential attitudes means that the more depressed participants were, the less pleasant they thought seeking help would be. Furthermore, the negative correlation between depression and experiential attitude means that the more depressed participants were, the less they thought help-seeking would be a good idea. It is not yet known what depressed individuals find particularly unpleasant and foolish about help-seeking. Similarly, the finding that higher levels of depression were associated with lower levels of injunctive norms, which reflect perceived support from important others, may reveal a relationship to be cautious of when designing depression help-seeking messages. Since previous work has pointed to potential boomerang effects regarding the increase of normative perceptions of suicide in billboard anti-suicide campaigns (Klimes-Dougan & Lee, 2010), it is crucial that future work provides a deeper understanding of how different

normative cues in help-seeking messages may affect intentions to seek help and other reasoned action variables.

### **Limitations**

A major assumption underlying this work was that intention formation processes and message responses would differ for depressed and non-depressed students. In order to test those assumptions, a sufficiently large number of participants who scored high on the PhQ-9 would be necessary. Although consistent with previous research (Lienemann et al, 2013), only 26% of the sample was moderately to severely depressed. Results therefore need to be interpreted with care.

Finally, whereas this study offers important insights into the predictors of help-seeking for depressive symptoms among college students, it is important to note that such results are correlational in nature and time-sensitive cause-and-effect mechanisms could not be established. Furthermore, given the limited availability of health care professionals, potential barriers to health care and preference for non-traditional help-seeking (Christensen et al., 2006), it is imperative to investigate additional approaches to help-seeking such as web-based help and support groups (Chambers et al., 2005) and mobile technology, especially in this target audience.

### **Implications**

The current study, along with previous work on health promotion messages targeting individuals suffering from depression (Klimes-Dougan & Lee, 2010; Lienemann & Siegel, 2015; Lienemann, Siegel & Crano, 2013), indicates that persuading at-risk individuals to seek help is not only challenging, but that it requires a complex and nuanced understanding of how message elements connect with depressed cognition on

the side of the target audience. Results strongly suggest that the reasoned action approach is an appropriate framework to be applied to the context of help-seeking for depression symptoms. Results further highlight potentially promising message content components, such as instrumental attitude and descriptive norms. Due to mixed findings related to low responsibility message framing resulting in boomerang effects, there is a critical need for further studies investigating isolated message components (such as message content and visuals) and resulting effects among depressed individuals.

Especially noteworthy is the relationship between depression symptoms and reasoned action variables. Analyses revealed an important finding – namely that depression is a real disorder that likely does not conform to linear statistical analyses assumptions. Only two cases in a sample of 259 college students eliminated a statistically significant and negative association between depression and help-seeking intentions. This has implications for how researchers should treat variance in depression scores in typical student samples.

First, non-linear statistical tests should be conducted in order to detect potential non-linear effects for different severity categories of depression. Second, limitations in power should be expected in student samples due to skewed data. Because of the difficulty in sampling for higher levels of depression severity, researchers should consider recruiting from both nonclinical and clinical samples to reach an improved distribution of depression scores usually not found in general student populations. Third, given the scarcity of empirical research in this area and the nature of depression as an independent variable in experimental research, researchers must be especially careful in drawing conclusions. Outliers must be carefully examined and decisions regarding the

analysis of depression data must be made in accordance with real-world applicability.

For example, whereas it might be useful to combine depression categories based on sample size and issues of power, it might not make much sense to combine depression categories based on what we know about different levels of depression in clinical psychology.

## CHAPTER III

### **STUDY 2: APPLYING CLINICAL DEPRESSION KNOWLEDGE TO PERSUASIVE GAIN-AND LOSS HEALTH MESSAGE FRAMING: AN EYE- TRACKING STUDY**

#### **Introduction and Research Questions**

Despite an increase in depression on college campuses, affected students rarely seek help. Little is known about how to effectively promote help seeking for depressive symptoms among college students, which is largely due to the separation of two primary literatures – clinical psychology and persuasion communication science. The present study takes an interdisciplinary approach by integrating clinical aspects of depression with persuasive communication science (gain- and loss framing). This informs questions about biased attention to, interpretation of, and memory for depression messages that were tested with eye-tracking technology, self-report measures, and linguistic analyses. The results will inform whether and how depression affects the entire cognitive persuasion process upon exposure to gain-and loss depression help-seeking messages.

Two scholarly literatures are particularly relevant for advancing understanding of help-seeking promotion messages that resonate with students affected by depression. First, clinical psychological approaches predominantly build on Beck's theory of depression (1976). Important for the present study, this work focuses on cognitive errors that college students affected by depression often engage in when processing information. Second, persuasive health communication science tests the principle that the effectiveness of persuasive messages is a function of the match between audience

characteristics and message features (Rimer & Kreuter, 2006). This work has usefully identified persuasion processes for a wide range of audience and message features.

Unfortunately, however, only few applications to college students affected by depression exist. The few studies that investigated message framing appeals found that conventional message approaches that have shown to be effective in non-depressed populations—such as messages that seek to increase awareness of health risks—tend to backfire when disseminated to college students affected by depression. For example, depressed students were less likely to seek help when confronted with a message that said “You are not to blame for your depression – seek help” (Lienemann et al., 2013). Even worse, depressed students were found to be more likely to consider suicide as an option when confronted with a message such as “Prevent Suicide, Treat Depression – See your Doctor” (Klimes-Dougan & Lee, 2010) than depressed students who did not see a message at all.

Despite these recent research efforts, systematic evaluation of depressed thinking as it pertains to the processing of health information is lacking. The clinical psychological perspective and the persuasive communication perspective have not been integrated in a systematic scholarly investigation. To begin filling this gap, the present study takes an interdisciplinary approach to advance understanding of how students suffering from depression process health information. The overarching goal of this study is to contribute to principled messages that effectively move college students affected by depression to seek help, and thus, improve their well-being.

The clinical psychological literature on depression has identified specific cognitive errors that are associated with depression, such as arbitrary inference (drawing

negative conclusions despite insufficient evidence), unrealistic attribution (thinking that one is responsible for one's problems) and selective thinking (focusing on negative information while ignoring positive information), among others. These cognitive errors shape a negative view of oneself, strongly affect people's experiences, and lead to a despondent view of the future (Beck, 1976).

Clearly, negativity is a striking quality of cognitive errors, which, seen through a persuasive health communication lens, connects almost seamlessly with the persuasion theory of gain-loss framing. Gain-loss framing refers to how a message presents information about, for example, a particular health behavior. A message can either describe the gains of engaging in the behavior or losses of not engaging in the behavior. In the context of health communication, investigators have examined the effectiveness of gain-loss messages as a function of how risky, or uncertain, an outcome of a health behavior is perceived to be. This work has shown that loss-framed messages are more effective for detection behaviors such as screening for cancer, because detection behaviors carry the risk of identifying a potentially severe problem. In contrast, gain-framed messages are more effective for prevention behaviors such as getting a flu shot, because the reward that those behaviors offer makes them less risky (Rothman et al., 2006).

It is unclear, however, how gain-loss framing works for depression help-seeking behaviors among depressed college students. Thus far, there exists no research that applied gain-loss framing to depression. The need for such an interdisciplinary approach is clear: the framing of a message in terms of positive or negative attributes directly links to the nature of depressed cognition, with its heightened focus on negative information.

For example, whereas help-seeking for health issues typically is considered a rewarding behavior that carries few risks, the negative self-view associated with depression may make it seem that help-seeking confirms that one has failed. Thus, messages that were intended as gain messages may in fact be interpreted as loss messages by college students affected by depression. As another example, subject to the negative filter that characterizes cognitive errors, certain words or visuals that were meant as neutral or positive, such as phrases as “you are not to blame,” may be perceived by depressed as threatening, leading to message rejection, or even worsening view of the self. Results will inform whether current theoretical predictions can be applied to depressed populations, or whether new theoretical accounts are needed.

Because of these important possibilities and the lack of systematic research on depression messages, it is critically important to test how gain-loss framing affects depressed college students who view the world through a negative lens. Specific aims for the present study include analyses of the entirety of health message engagement processes including attention processes, interpretation processes, and finally, memory processes in order to test whether and at what stages depression biases occur and how this connects with the overall effectiveness of the message.

Because the specific aims are based on attention processes that take place upon immediate exposure to messages, eye-tracking technology will provide crucial information about attention and subsequent memory for gain-and loss framed messages. Due to the sensitive and threatening nature of self-relevant information about depression, biased attention to depression-related information is plausible. Whereas non-depressed college students may respond to threatening information by turning their attention away

from such information, the nature of depression allows the hypothesis that depressed college students are drawn to negative and threatening information. This offers insight in explanatory mechanisms underlying cognitive errors. For example, increased attention to negative information is consistent with findings that depressed college students may remember negative information more so than positive information (Gotlib & Joorman, 2010; Zuroff, Colussy, & Wielgus, 1986). Consistent with this, better memory for loss-framed than gain-framed messages is expected among depressed college students and a reversed pattern for non-depressed students. This is important, because remembering the message serves as an indicator of message effectiveness. In order to confirm findings of study 1 and to investigate interpretational processes, reasoned action theory serves as useful framework to test whether and how depression and gain-and loss framing influence attitude, perceived norms, perceived capacity, and ultimately, intentions to seek help for depression.

By connecting which parts of a message depressed college students pay most attention to, we can understand memory patterns, relate such insights to interpretational processes and overall contribute to the cognitive understanding of depression. We can also contribute to the empirical understanding of what makes a certain health message persuasive and why – as such information is currently lacking, especially for health communication interventionists who are struggling to find effective ways to communicate with depressed college students.

## Method

### Study Design and Procedure

Consistent with the population of interest, a lab experiment was conducted with 154 undergraduate students who were enrolled in the School of Journalism and Mass Communication's (University of Minnesota) internal subject pool. The university's institutional review board granted approval for this study. One case was excluded from analyses, because the participant fell outside of the age parameters of the study (67 years). The final sample included 153 undergraduate students aged 18 to 30 years ( $M = 19.85$ ,  $SD = 1.82$ ). Of the 153 participants, 115 were females (75.2%) and 38 were males (24.8%). The majority of participants were White (75.2%), followed by Asian (18.3%), Black/African American (3.3%), and other (3.3%) and born in the United States (84.3%). Seventeen participants (11.1%) were not U.S. citizens or U.S. permanent residents. Most of the undergraduate students in this sample were sophomores (32%), followed by juniors (26.8%), freshmen (24.2%), seniors (15.7%), and other (1.3%), indicating a status of transfer student or returning undergraduate student.

Mean scores for depression in this sample were relatively low ( $M = 4.88$ ,  $SD = 4.09$ ). Using PhQ9-depression categorization, 79% of participants showed no to mild depression symptoms, while 15% showed moderate to moderately severe depression symptoms.

Whereas the sample was fairly split when responding to the question, "Have you ever looked for information on depression for yourself, your family, or someone you know?" (Yes: 58.8%; No: 41.2%), most of the participants indicated that they have not

made an appointment with a health professional on campus to discuss depression symptoms in the last twelve months (94.1%) and were not currently participating in counseling or therapy overall (92.2%). Upon completion of the study, most participants indicated that they were extremely honest when answering the questions in this study (92.8%). Interestingly, the more severe the depression symptoms, the less likely participants were to look for information on depression for themselves or close others ( $r = -.25, p = .002$ ). Furthermore, the more depressed participants were, the less likely they were to have received counseling or therapy in the last 12 months ( $r = -.21, p = .013$ ).

Participants were randomly assigned to one of two experimental conditions. The gain-framed depression help-seeking message condition had 75 participants (49%) and the loss-framed depression help-seeking message condition had 78 participants (51%).

Participants who signed up for the study through the subject pool in exchange for course credit came to a departmental research lab at their assigned 30-minute time slot. In accordance with approval from the Institutional Review Board, consent forms were phrased vaguely (Investigating Health Messages via Eye-Tracking Technology), in order to not cue the study's experimental manipulation and outcome of interest.

A master intake document recorded participants' names, assigned ID's and randomly assigned experimental condition (gain or loss). After consenting to study participation, participants were asked to complete a Qualtrics pre-questionnaire in a first experimental room equipped with a computer. Due to the sensitive nature of the pre-questionnaire, which assessed current depression symptoms, participants were given as much privacy as possible. Only one participant at a time completed a pre-questionnaire in this computer room and the researcher was not present while participants completed the

questionnaire. Upon completion, participants were guided to a second experimental room equipped with a computer and secondary screen with eye-tracking device. The experimenter sat in front of the main computer while the participant took a seat in front of the screen with the eye-tracking device. A Tobii X60 eyetracker was used, which records eye movements at a rate of 60 Hz, which indicates that the machine collects 60 gaze data points per second (Tobii Technology, 2010). In order to minimize intrusion, the Tobii eye-tracking sensor, a binocular camera, was placed below a 23'' flat-screen monitor (1280 x 1024 pixel resolution) and participants were not required to wear or maneuver any devices.

Before each eye-tracking session, the experimenter completed a calibration procedure with each participant using a 9-point calibration slide. This calibration procedure is essential as it maximizes data quality by matching the eye-tracking laser with the unique pupils and eye-movements of each participant. Upon completion of the calibration process, the participant viewed an instruction page that asked to view the subsequent health message for any desired length of time and to let the experimenter know once this desired length of time had been reached. Next, the respective messages (gain or loss) were displayed on the participant's' screen. Upon the participants' cue to end the session, the experimenter ended and saved the session and guided the participant back to the computer room to complete the main survey. After completion of the main survey, participants were debriefed and questions regarding study participation and course credit were answered. Participants were asked not to discuss the study with their peers, as not to influence potential participants of the study.

## **Experimental Stimuli**

The experimental stimuli were two messages that were created based on the theoretical underpinnings of gain-and loss framing. Both messages consisted of five components: A headline, health behavior outcome statements, disease information on depression, a cue for action (a link to the university's mental health center), and a visual. In order to increase the quality of the health message, seven actors were recruited through a casting with the University of Minnesota's Guthrie Theatre BFA Actor Training Program, as well as a local actor network. Visuals and final health messages were constructed in collaboration with a professional photographer and a graphic designer.

The visual depicted seven individuals from the front, all resembling college students, who were sitting in a classroom-like environment. Focal point of the visual were two students sitting in the front row of a classroom, one male and one female. Other students were placed next to and behind those two students. The experimental manipulation distinctly changed the affective tone of the visuals, as well as headline and health behavior outcome statements. According to gain-and loss framing principles, health information about a behavior can either point to the benefits of engaging in the behavior (gain frame) or the costs of failing to engage in the behavior (loss frame) (Rothman et al., 2006). Gain-framed statements can both refer to the good things that will happen and the bad things that will not happen as a result of help-seeking, and loss-framed statements can both refer to the bad things that will happen and the good things that will not happen as a result of not seeking help. In order to create distinct differences between language used in the two experimental stimuli, the current research focuses on

the good things that will happen if one seeks help for depression (gain frame) and the bad things that will happen if one does not seek help for depression (loss frame).

Accordingly, the gain message headline read: “Depression. Seeking Help Helps. There are many benefits to seeking help for depression,” whereas in the loss condition, the headline read: “Depression. Not Seeking Help Hurts. There are many problems to not seeking help for depression”. Health behavior outcome statements in the gain condition displayed the positive outcomes of help-seeking for depression, such as “your mental health improves, reduces stress, gain interest or pleasure in hobbies and activities,” whereas health behavior outcome statements in the loss condition referenced the negative outcomes of not seeking help for depression, such as “your mental health worsens, increases stress, loss of interest or pleasure in hobbies and activities.” Gain-and loss outcome statements were displayed on the lower left panel of the message (see figure 5-6). A cue for action (e.g., to look for further information and access the appointment portal for mental health resources on campus) was displayed in both messages and contained a link to the university’s mental health website ([www.mentalhealth.umn.edu](http://www.mentalhealth.umn.edu)).

The visuals in both messages reflected the principles of gain-and loss framing by matching the two main students’ facial expressions and body language with positive (gain condition) and negative (loss condition) affective cues. In the gain condition, both students smiled, transmitting feelings of confidence and hope through upright and relaxed posture, as well as a direct gaze toward the viewer. Contrary to this, the two main students’ facial expressions and body language in the loss condition corresponded to feelings of sadness, hopelessness and despair. The five remaining students in the visual

portrayed neutral emotions while paying attention to a stimulus suggestive of a professor or a whiteboard outside of the scope of the camera.

Students displaying neutral emotions were included in the visual not only to increase relevance through perceptions of a realistic classroom setting, but also to provide viewers the opportunity to avoid potentially threatening self-relevant information related to depression in the health message. For example, if self-relevant depression information had been too threatening and sensitive, participants would have had the opportunity to avoid this information by examining the neutral students during message exposure. Disease information statements about depression and cues for action were the same in both message conditions and were displayed on the lower right panels of the message (see figure 5-6).

**Depression**  
**SEEKING HELP HELPS**  
*There are many benefits to seeking help for depression*

**Benefits of Seeking Help**

- Your mental health improves
- Reduces stress
- Gain interest or pleasure in hobbies and activities
- Increases energy and concentration
- Better sleep

**When should I seek help?**  
*Some symptoms include:*

- Persistent sad, anxious, or "empty" mood
- Feelings of hopelessness
- Feelings of guilt, worthlessness, or helplessness
- Thoughts of death or suicide

*Not everyone who is depressed experiences every symptom. Some people experience only a few.*

**For Information visit**  
 University of Minnesota Mental Health  
[www.mentalhealth.umn.edu](http://www.mentalhealth.umn.edu)

Figure 5. Gain-Framed Depression Help-Seeking Message.



Figure 6. Loss-Framed Depression Help-Seeking Message.

## Measures

**Areas of interest.** The Tobii x60 eye-tracker captured attention for areas of interest for both the gain-and loss depression help-seeking message. For each message, six areas of interest were created; gain-or loss framed headline (text), gain-or loss framed help-seeking outcome statements (text); disease information (text), cue for action (text), neutral persons (visual), and positive or negative main persons (visual).

**Reasoned action variables.** Reasoned action variables were measured consistent with theory and measurement recommendations (Fishbein & Ajzen, 2010; Yzer et al., 2015) via self-report measures. Due to the nature of the sample, which consisted of both non-depressed and depressed individuals, the reasoned action variables were adapted to increase relevance for those who are currently not suffering from depression by inducing imaginary scenarios (e.g., “if I were to experience depressive symptoms”). The target

behavior was phrased as “making an appointment with a health professional on campus to discuss depressive symptoms if you were to experience depressive symptoms anytime in the next two months”. *Intention* was measured by asking participants “How likely is it that you will make an appointment with a health professional on campus to discuss depressive symptoms if you were to experience depressive symptoms anytime in the next two months?” (1=very unlikely, 7=very likely) and respond to the statement “I expect to make an appointment with a health professional on campus to discuss depressive symptoms if I were to experience depressive symptoms anytime in the next two months” (1=very unlikely, 7=very likely). The intention items correlated strongly,  $r = .94$ . Scores were therefore averaged to form a behavioral intention scale.

Five seven-point semantic differential items measured instrumental and experiential *attitude*. The stem “My making an appointment with a health professional on campus to discuss depressive symptoms if I were to experience depressive symptoms anytime in the next two months would be...” was followed by the items *bad - good*, *foolish-wise*, *harmful -beneficial*, *unnecessary - necessary* (for instrumental attitude), and *not enjoyable - enjoyable*, *stressful – relaxing*, *unpleasant – pleasant*, and *something I dislike – something I like* (for experiential attitude). Scores on the two sets of items were averaged to yield indicators of instrumental attitude,  $\alpha = .81$ , and experiential attitude,  $\alpha = .85$ .

*Perceived norms* were assessed on seven-point scales. An injunctive norm measure asked participants “How do you think most people important to you would feel about you making an appointment with a health professional on campus to discuss depressive symptoms if you were to experience depressive symptoms anytime in the next

two months?” Scale anchors ranged from strongly disapprove to strongly approve. To measure descriptive norms, participants were asked “How many of the people important to you on campus who struggle with emotional and psychological problems do you think will make an appointment with a health professional on campus to discuss depressive symptoms if they were to experience depressive symptoms anytime in the next two months?” Scale anchors ranged from almost none to almost all.

The *perceived behavioral control* measure also used seven-point scales. Perceived capacity was measured with the question, “There can be a variety of obstacles to your making an appointment with a health professional on campus to discuss depressive symptoms if you were to experience depressive symptoms anytime in the next two months. Even in the face of such obstacles, how sure are you that if you really wanted to, you could make an appointment with a health professional on campus to discuss depressive symptoms if you were to experience depressive symptoms anytime in the next two months?” Two semantic differentials for perceived autonomy were used. The stem “My making an appointment with a health professional on campus to discuss depressive symptoms if I were to experience depressive symptoms anytime in the next two months would be” was followed by the items *not under my control – under my control* and *not up to me – up to me*. A perceived autonomy scale was computed by averaging these two items,  $r = .67$ .

**Depression.** The Patient Health Questionnaire-9 (PhQ-9) was used to measure depressive symptomatology. The PhQ-9 consists of nine items. Participants indicated how often (0= not at all; 3=nearly every day) they had been bothered by specific depressive symptoms over the last two weeks. Description of depressive symptoms is

based on the nine DSM-IV criteria for depression (e.g., “Little interest or pleasure in doing things” and “Feeling down, depressed, or hopeless”). The sum of all PhQ-9 items indicates the severity of depression (possible scores range from 0-27). If categorized, a score of 1-4 indicates minimal depressive symptoms, 5-9 indicates mild depressive symptoms, 10-14 indicates moderate depressive symptoms, 15-19 indicates moderately severe depressive symptoms, and 20-27 indicates severe depressive symptoms (American Psychiatric Association, n.d.). Due to previous findings (see study 1) revealing potential non-linear effects, depression scores were categorized into three groups: minimal depression ( $n = 84$ ; 53.8%), mild depression ( $n = 39$ ; 25%), and moderate to severe depression ( $n = 24$ ; 15.4%) for analysis purposes.

**Memory.** In the post-exposure questionnaire, participants responded to a free recall memory measures (i.e., “What do you remember from the message you saw?”). If and whether memory for gain-and loss-framed depression help-seeking messages is influenced by depression was tested with two methodological approaches. The first approach was a two-step human content analysis and the second approach was a computerized linguistic analysis. These approaches were chosen to triangulate research findings by being strategically aware of the advantages and limitations of each procedure. For example, whereas human qualitative and quantitative coding captured nuances and context in the participants’ open-ended responses, a computerized analysis captured the numerical proportions of linguistic properties indicative of psychological concepts. Capturing such concepts is important, because it sheds light on and provides a snapshot of depressed and non-depressed participants’ behavioral responses as they produce text in their own words as accessed by potentially disordered cognition.

First, a two-phased content analysis of the responses to this open-ended memory measure was conducted. The first phase was guided by grounded theory principles. This first phase served two purposes. First, due to the exploratory nature of analyzing memory for gain-and loss framed help-seeking messages influenced by depression, a close reading of open-ended responses informed subsequent research questions and directions. Second, the close reading informed decisions about the inclusion of content categories for the quantitative content analysis. For example, the final coding sheet for the quantitative content analysis only contained content categories that were previously identified in the close readings.

All text responses were read multiple times by two researchers and main themes emerged from the iterative reading and coding. Once themes were identified, the second phase of data analysis - a quantitative coding analysis - was initiated. The previous identification of themes provided the foundation for this analysis. To be specific, identifying the central themes in the constant comparative method and then conducting a quantitative analysis allowed the assessment of the relative frequency of themes and uncovered associations between depression symptoms and memory for positive (gain-framed) and negative (loss-framed) depression help-seeking information.

A coding instrument and a codebook were developed in order to analyze the participants' open-ended responses. This process was guided by the previous identification of themes through the constant-comparative method and relevant literature related to depression and memory (Burt, Zembar, & Niederehe, 1995; Kizilbash, Vanderploeg, & Curtiss, 2002), as well as literature on best practices in quantitative content analysis (Berelson, 1952; Feng, 2014; Krippendorff, 2013; Lacy et al., 2015;

Riffe, Lacy, & Fico, 2005). Multiple iterations took place before the final instrument was completed. The final codebook contained detailed information on what the coding items were intended to capture and how to appropriately code the data.

The coding schema was designed to capture information about memory for gain- and loss framed messages (see table 5). Two student coders, who had no prior involvement with the study, were hired and trained on the protocol of coding and analyzing the open-ended data by the researcher. Outside coders were hired and trained due to the researcher's increased familiarity with the data and the associated potential differences in coding (Lacy et al., 2015). Intercoder reliability checks for each variable were conducted by extracting the two sets of coding data from Qualtrics and uploading them to ReCal (Freelon, 2013). For the purposes of this project, ReCal2 (for nominal data coded by two coders) was used to calculate intercoder reliability coefficients (percent agreement and Krippendorff's alpha). In a first round of test coding, both coders coded the same random sample of a portion of the data ( $n = 50$ ). Inter-coder agreement yielded desirable levels for most of the variables; but three variables in particular scored below these desirable levels (e.g., lower than 80% agreement). In order to improve reliability of the coding instrument, disagreement between coders was resolved and consensus was reached in a second in-person meeting with coders and the researcher. A second round of test coding was conducted with a second random sample of the data ( $n = 50$ ). The two separate categories ("other emotion" and "no mention" for the "Emotion of People" variable) were collapsed into which greatly improved reliability scores (see table 5).

Table 5

*Inter-Coder Reliability Statistics for Second Round of Test Coding*

Coding Categories	Inter-Coder ( $N = 2$ ) Reliability Statistics for Random Portion of Data ( $n = 50$ )	
	Percentage Agreement	Krippendorff's Alpha
Visual: People	96%	.93
Emotion of People	100%	1
Gain/Loss Statements (Help-Seeking)	86%	.78
Actions	86%	.72

For a linguistic inquiry with the goal of exploring research questions identified in the close reading of open-ended responses, all text entries provided by the participants were analyzed in terms of their linguistic properties. Open-ended responses were analyzed with Linguistic Inquiry and Word Count software (LIWC, 2015). This software was designed to analyze text responses on a word by word basis, calculate the percentage of words in the text that match each of up to 82 language dimensions, and generate output as a tab-delimited text file that can be directly read into application programs (Pennebaker & Francis, 1996). The software calculates a ratio of the number of words in each word category with each word category intended to capture different psychological concepts (Pennebaker, 2011).

Overall, given the lack of research in this area, linguistic analyses were conducted to test whether the use of pronouns, words related to risk and reward, and words related to positive and negative emotions were used in the participants' responses to the free recall measure. For the present study, software settings were therefore selected to analyze

general pronoun word categories (personal pronouns and impersonal pronouns) and specific pronoun word categories (“I,” “we,” “you,” “she/he,” “they”). Dictionary settings also captured drive (risk and reward), as well as general affect (positive and negative emotions) and specific affect (anxiety, anger, and sadness) words.

Despite limitations of word count software, such as the inability to detect irony or context and nuances of meaning (Pennebaker, 2011), an exploratory linguistic analysis could uncover whether word choice for free recall for gain-or loss framed messages differ as a function of depression and message framing.

**Perceived gain-and loss framing.** Participants indicated their perceptions of whether the framing of the depression help-seeking message focused on the gains or the costs (losses) of not seeking help. This perception was assessed with the following 7-point semantic differential measure, “Please rate your response to the following statements. The arguments and visuals in the message were: focused on the costs of not seeking help – focused on the benefits of seeking help.”

## **Results**

### **Preliminary Analyses**

**Random assignment and manipulation check.** Random assignment was successful. Individuals who were randomly assigned to either the gain-or the loss framed depression help-seeking message did not differ in age, sex, student status, race/ethnicity, nationality, professional help-seeking history and current help-seeking, exposure and attention to depression awareness or help-seeking messages, depressive symptoms, and self-reported honesty with which questions were answered.

Independent t-tests further revealed that the gain and loss frame manipulation was successful. Health message framing was perceived differently in the gain message ( $M = 5.97, SD = 1.34$ ) and the loss message ( $M = 4.58, SD = 2.07$ ) conditions;  $t(151) = 4.94, p < .001$ , with higher means indicating a focus on ‘benefits of help-seeking’ and lower means indicating a focus on ‘costs of not seeking help.’

**Descriptive analyses across experimental groups.** Experiential attitude, instrumental attitude, and descriptive norms correlated with intentions. Interestingly, injunctive norms, autonomy, and perceived capacity were not associated with intentions (see Table 6). Overall, participants expressed more positive instrumental attitudes (the evaluation of help-seeking in terms of positive attributes) ( $M = 5.44, SD = 1.10$  on a 7-point scale) than experiential attitudes (the evaluation of help-seeking in terms of positive and negative affective experiences) ( $M = 3.45, SD = 1.06$ ). Participants also indicated that important others would strongly approve of their making an appointment with a health professional on campus for depressive symptoms if needed ( $M = 6.03, SD = 1.08$ ), but also believed that actual professional help-seeking for depressive symptoms if needed is rare among important others on campus ( $M = 3.19, SD = 1.47$ ). Participants felt somewhat capable ( $M = 5.40, SD = 1.36$ ) and autonomous ( $M = 5.59, SD = 1.15$ ) to seek help for depressive symptoms on campus. Reported intentions to do so were higher than the scale midpoint ( $M = 4.25, SD = 1.76$ ).

Depressive symptoms, as assessed with the clinical PhQ-9 scores, were negatively associated with intentions to seek help ( $r = -.25, p = .002$ ), instrumental attitude ( $r = -.21, p = .012$ ) and injunctive norms ( $r = -.21, p = .011$ ). Clearly, higher levels of depression decrease the chances that affected individuals will intent to seek professional help, which

largely confirms previous findings in the literature (Christensen et al., 2006; Keeler et al., 2013; Lienemann, Siegel, & Crano, 2013; Lienemann & Siegel, 2015).

Table 6

*Means, Standard Deviations and Correlations among Key Variables*

	<i>M (SD)</i>	n	BI	I-Att	E-Att	IN	DN	Cap	Aut
PHQ-9	4.9 (4.09)	147	-.25**	-.21*	.06	-.21*	-.02	-.11	-.12
Behavioral Intention (BI)	4.25 (1.76)	153		.54**	.35**	.13	.25**	.05	.04
Instrumental Attitude (I-Att)	5.44 (1.10)	153			.36**	.30**	.28**	.13	.28**
Experiential Attitude (E-Att)	3.45 (1.06)	153				-.04	.29**	-.07	-.04
Injunctive Norm (IN)	6.03 (1.08)	153					-.03	.08	.08
Descriptive Norm (DN)	3.19 (1.47)	153						-.03	-.07
Perceived Capacity (Cap)	5.40 (1.36)	153							.21*
Perceived Autonomy (Aut)	5.59 (1.15)	153							

*Note.* PHQ-9 scale range is 0-27. All other means are relative to scales ranging from 1 to 7. \*\*  $p < .01$ .

## **Main Analyses**

**RQ1: Do depression and message type (gain or loss) influence levels of attention for gain-and loss framed help-seeking messages? *Visual Inspection of Depression Categories and Depression Help-Seeking Message Components.***

First, a qualitative visual inspection of heat maps will aid in the detection of general attention patterns in depression groups (minimal, mild, moderate to severe). Heat maps show aggregate attention indicators from all participants by using different colors. Green indicates light viewing, whereas red indicates heavy viewing. Heat maps were created based on message condition (gain or loss) and depression categories.

Heat maps for the gain-framed message condition indicate that those with minimal levels of depression fixate on the gain-framed headline (i.e. “Seeking Help Helps”) and the happy faces much more than those with mild and moderate to severe levels of depression (see figures 7 through 12).



Figure 7. Attention patterns (absolute duration) for those with minimal levels of depression in the gain message condition.



Figure 8. Attention patterns (absolute duration) for those with mild levels of depression in the gain message condition.



*Figure 9.* Attention patterns (absolute duration) for those with moderate to severe levels of depression in the gain message condition.

In the loss condition, heat maps showed weak viewing of faces and strong viewing of disease information, especially for the mild depression and the moderate to severe depression group (see figures 10 through 12).



Figure 10. Attention patterns (absolute duration) for those with minimal levels of depression in the loss message condition.



Figure 11. Attention patterns (absolute duration) for those with mild levels of depression in the loss message condition.



Figure 12. Attention patterns (absolute duration) for those with moderate to severe levels of depression in the loss message condition.

All quantitative eye-tracking metrics (total fixation duration, fixation count, and total visit duration) except time to first fixation consistently correlated very strongly (see tables 7 – 12).

Table 7

*Correlations Among Eye-Tracking Metrics for Headline*

Variables	<i>M (SD)</i>	Time to First Fixation	Total Fixation Duration	Fixation Count
Time to First Fixation	.92 (2.00)		-	
Total Fixation Duration	2.72 (2.09)	-.11		
Fixation Count	11.98 (8.24)	-.09	.92**	
Total Visit Duration	3.09 (2.33)	-.07	.95**	.94**

*Note:* \*\* Correlation is significant at the .05 level; \* correlation is significant at the .01 level.

Table 8

*Correlations Among Eye-Tracking Metrics for Gain/Loss Statements*

Variables	<i>M (SD)</i>	Time to First Fixation	Total Fixation Duration	Fixation Count
Time to First Fixation	10.22 (6.95)			
Total Fixation Duration	5.78 (4.59)	-.04		
Fixation Count	18.10 (12.62)	-.03	.94**	
Total Visit Duration	6.64 (4.79)	-.02	.94**	.95**

*Note:* \*\* Correlation is significant at the .05 level; \* correlation is significant at the .01 level.

Table 9

*Correlations Among Eye-Tracking Metrics for Disease Information*

Variables	<i>M (SD)</i>	Time to First Fixation	Total Fixation Duration	Fixation Count
Time to First Fixation	10.52 (7.00)			
Total Fixation Duration	9.01 (6.42)	.03		
Fixation Count	30.88 (19.02)	.09	.93**	
Total Visit Duration	10.88 (7.32)	.12	.91**	.95**

*Note:* \*\* Correlation is significant at the .05 level; \* correlation is significant at the .01 level.

Table 10

*Correlations Among Eye-Tracking Metrics for Behavioral Cue*

Variables	<i>M (SD)</i>	Time to First Fixation	Total Fixation Duration	Fixation Count
Time to First Fixation	22.76 (10.39)			
Total Fixation Duration	.84 (1.21)	-.09		
Fixation Count	2.89 (3.71)	-.06	.92**	
Total Visit Duration	.90 (1.26)	-.06	.99**	.93**

*Note:* \*\* Correlation is significant at the .05 level; \* correlation is significant at the .01 level.

Table 11

*Correlations Among Eye-Tracking Metrics for Happy/Sad People*

Variables	<i>M (SD)</i>	Time to First Fixation	Total Fixation Duration	Fixation Count
Time to First Fixation	4.93 (7.71)			
Total Fixation Duration	3.33 (6.02)	-.12		
Fixation Count	10.84 (10.33)	-.22**	.91**	
Total Visit Duration	3.63 (6.46)	-.12	1.00**	.92**

*Note:* \*\* Correlation is significant at the .05 level; \* correlation is significant at the .01 level.

Table 12

*Correlations Among Eye-Tracking Metrics for Neutral People*

Variables	<i>M (SD)</i>	Time to First Fixation	Total Fixation Duration	Fixation Count
Time to First Fixation	9.12 (11.74)			
Total Fixation Duration	1.63 (2.03)	-.21*		
Fixation Count	5.85 (5.23)	-.29*	.90**	
Total Visit Duration	1.71 (2.10)	-.22*	.99**	.89**

*Note:* \*\* Correlation is significant at the .05 level; \* correlation is significant at the .01 level.

***Total Viewing Duration.*** Across message conditions and levels of depression, participant spent an average of 32.76 seconds viewing the depression help-seeking messages.

Total viewing time was not a function of the interaction of depression groups (minimal, mild, and moderate) and message condition (gain and loss),  $F(2, 134) = .14$ ;  $p = .867$ , partial  $\eta^2 = .00$  (see figure 13). Total viewing time did also not differ by depression,  $F(2, 134) = .71$ ;  $p = .491$ , partial  $\eta^2 = .01$  and message condition,  $F(1, 134) = 1.97$ ;  $p = .162$ , partial  $\eta^2 = .02$ . Although differences were not detected from a statistical perspective, mean levels will be reported for illustrative purposes. Due to the exploratory nature of this study, as well as a lack of power in certain cells, such report could aid in the detection of patterns and inform future research questions.

Those who fell into the minimal depression category viewed the messages for the longest period of time ( $M = 34.75$  seconds;  $SD = 23.93$ ), whereas viewing duration was shortest for those who fell into the moderate to severe depression category ( $M = 27.86$  seconds;  $SD = 12.04$ ).

Overall, those with mild depression symptoms ( $n = 17$ ) viewed especially the gain message for the longest duration of time ( $M = 37.56$  seconds;  $SD = 33.68$ ), whereas the shortest duration was reported for the moderate to severe depression category and the loss message ( $M = 26.17$  seconds;  $SD = 14.96$ ). All depression groups viewed the gain message for longer durations of time than the loss message (see table 13 and figure 13).

Table 13

*Viewing Times by Depression and Message Condition*

	Message Frame			
	Gain Frame ( <i>SD</i> )	<i>N</i>	Loss Frame ( <i>SD</i> )	<i>N</i>
Depression				
Minimal Depression	36.97 (30.27)	43	32.12 (12.79)	36
Mild Depression	37.56 (33.68)	17	28.30 (10.72)	20
Moderate to Severe Depression	30.23 (6.02)	10	26.17 (14.96)	14

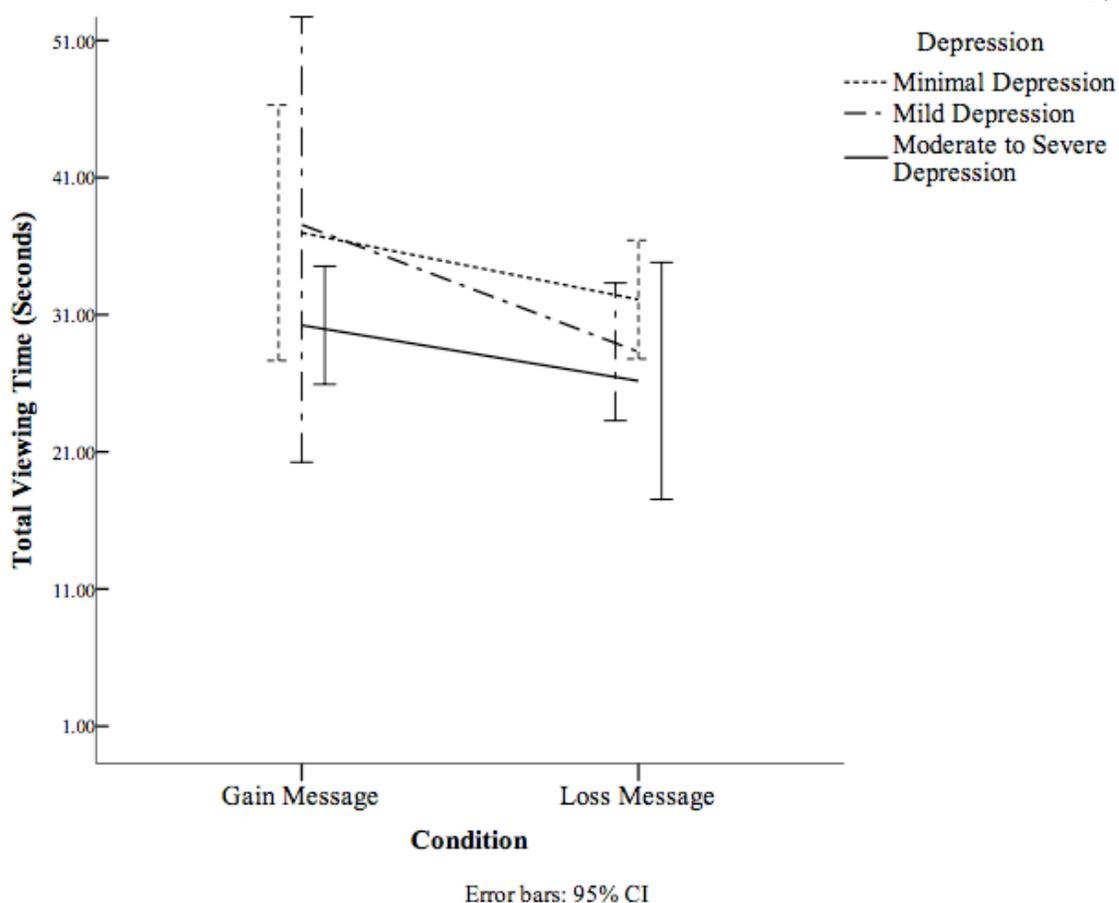


Figure 13. Total Viewing Time by Depression and Message Condition.

**Number of Fixations.** The number of times participants fixated on areas of interest was not a function of the interaction of message condition and depression,  $F(12, 258) = 1.07, p = .385$ , partial  $\eta^2 = .05$ . Number of fixations did also not differ by depression,  $F(12, 258) = 1.19; p = .293$ , partial  $\eta^2 = .05$  and message condition,  $F(6, 129) = 1.81; p = .102$ , partial  $\eta^2 = .08$ . Although differences were not detected from a statistical perspective, noteworthy mean levels will be reported for illustrative purposes.

Those with minimal depression showed high fixation counts for gain headline and happy persons. Furthermore, the moderate to severe depression group showed the lowest

amount of fixations for the behavioral cue compared to other depression groups in

both the gain and loss message conditions (see figures 14 through 15).

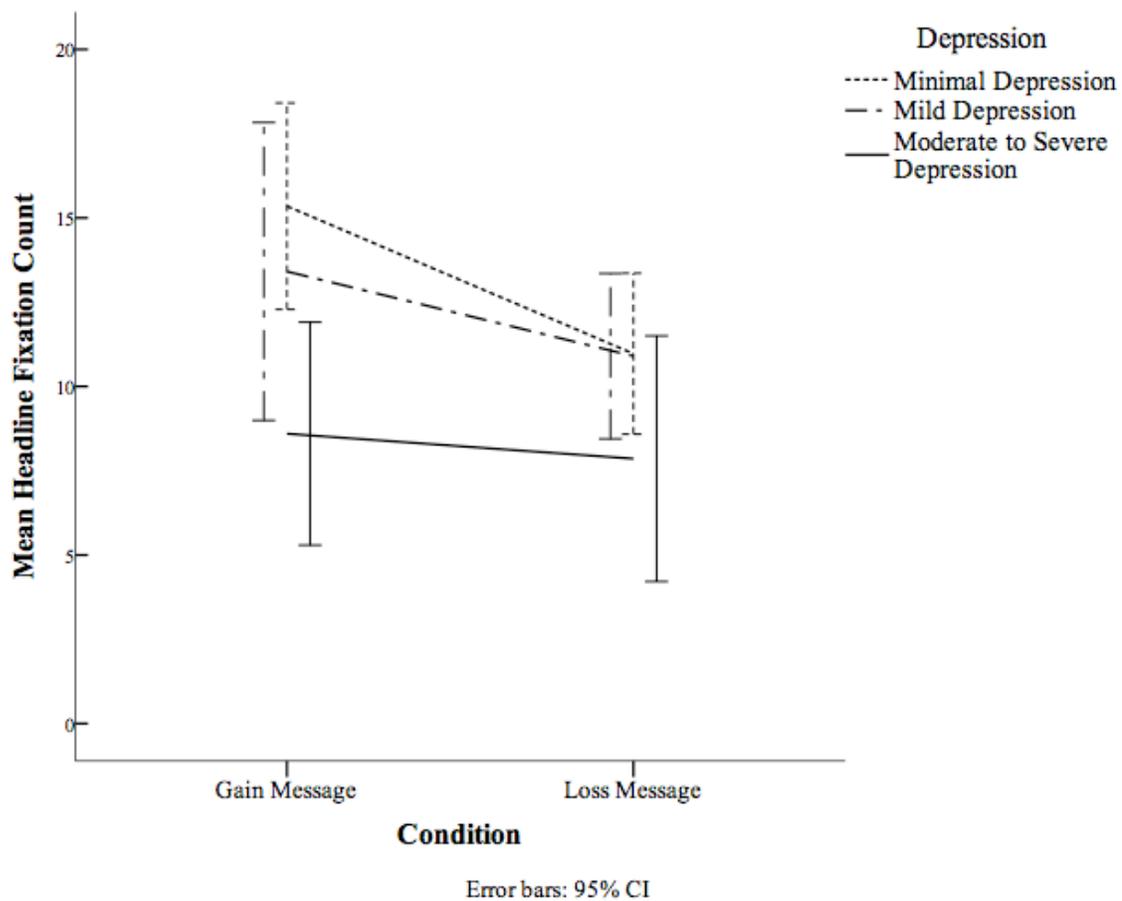


Figure 14. Headline Fixation Count by Depression and Message Condition.

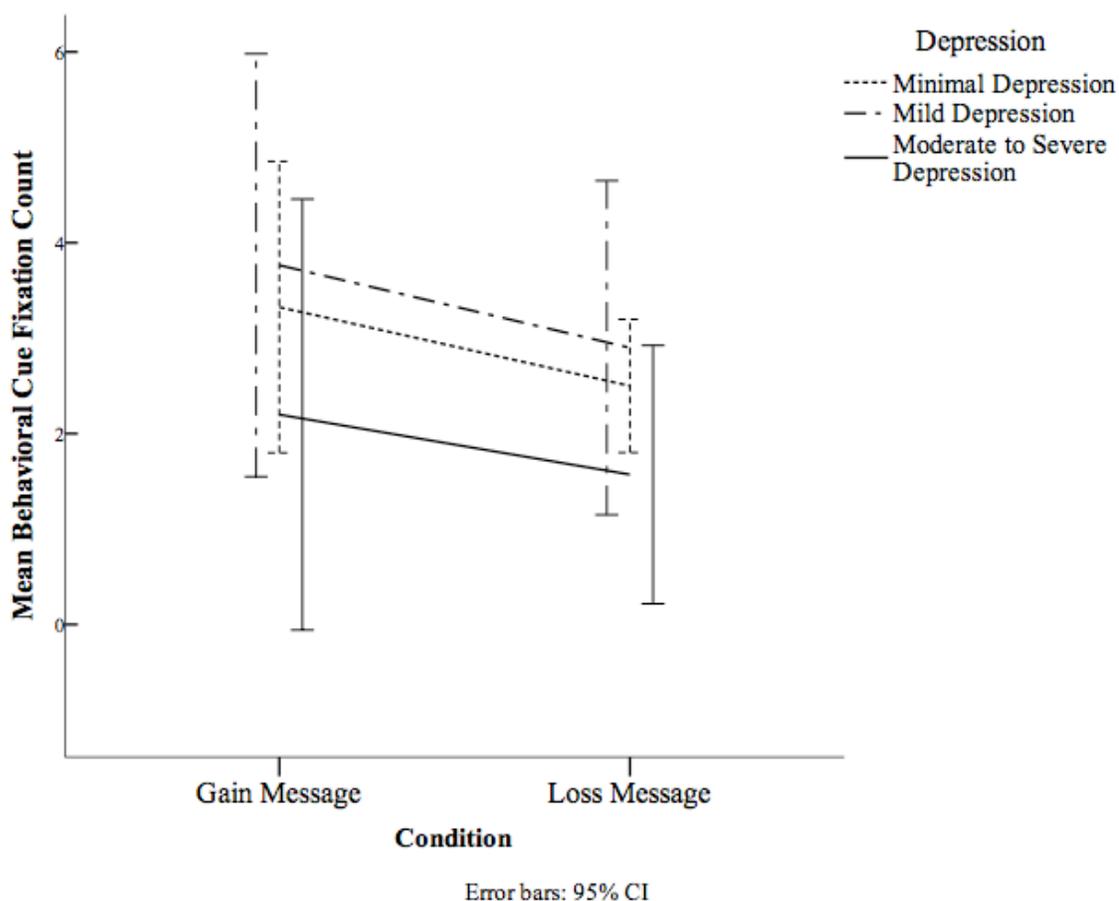


Figure 15. Behavioral Cue Fixation Count by Depression and Message Condition.

**Total Fixation Duration.** Total fixation duration, or the sum of the duration for all fixations within an area of interest, was not a function of the interaction of message condition and depression,  $F(12, 258) = 1.06, p = .391$ , partial  $\eta^2 = .05$ .

Total fixation duration did not differ by depression,  $F(12, 258) = .97; p = .474$ , partial  $\eta^2 = .04$ , but by message condition,  $F(6, 129) = 2.33; p = .036$ , partial  $\eta^2 = .10$ . Except for neutral persons, participants seemed to fixate on message components for longer durations in the gain message condition than in the loss message condition (see table 14).

Table 14

*Total Fixation Duration for Message Components by Message Frame*

Message Components	Message Frame			
	Gain Frame ( <i>SD</i> )	<i>N</i>	Loss Frame ( <i>SD</i> )	<i>N</i>
Headline	3.21 (2.42)	73	2.25 (1.58)	73
Gain/Loss Statements	6.54 (5.62)	73	5.06 (3.14)	73
Disease Info	9.77 (7.54)	73	8.23 (5.04)	73
Behavioral Cue	.98 (1.43)	73	.72 (.94)	73
Happy/Sad Persons	4.21 (8.27)	73	2.45 (1.87)	73
Neutral Persons	1.57 (2.46)	73	1.67 (1.45)	73

Although differences were not detected for the interaction effect from a statistical perspective, noteworthy mean levels will be reported for illustrative purposes.

Interestingly, those with minimal depression appeared to fixate on the happy people in the gain message for longer durations than any other group (see figure 16).

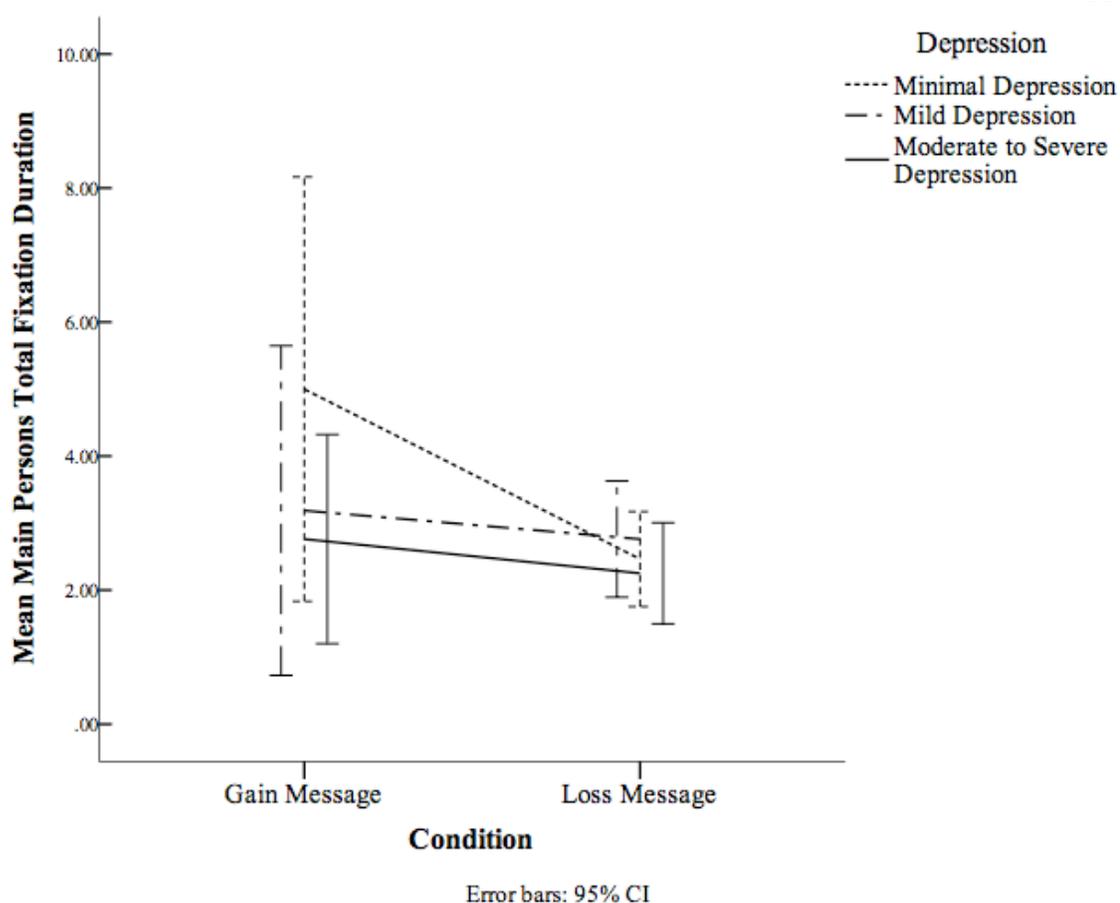
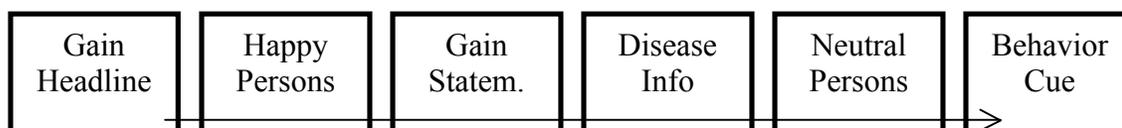


Figure 16. Main Persons (Happy in Gain Message and Sad in Loss Message) by Depression and Message Condition.

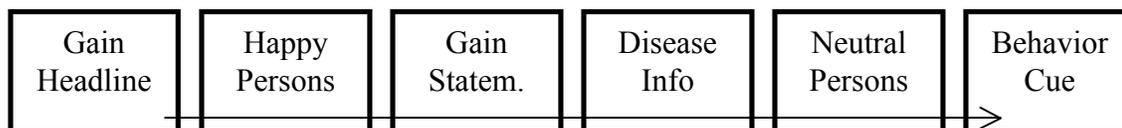
**Time to First Fixation.** Analyses of time to first fixation, or the time it takes participants to fixate on areas of interest, yielded a small interaction effect of minimal, mild, and moderate to severe depression categories and gain-or loss message condition,  $F(12, 146) = 1.65, p = .085, \text{partial } \eta^2 = .12$ . Time to first fixation did not differ by depression,  $F(12, 146) = 1.36; p = .192, \text{partial } \eta^2 = .09$  and message condition,  $F(6, 73) = .92; p = .485, \text{partial } \eta^2 = .07$ .

In the gain condition, those with minimal levels of depression fixated on the gain headline first (TFF = .71), followed by the happy persons (TFF = 6.57), followed by gain statements and disease information (TFF = 10.91), followed by the neutral persons (TFF = 13.73), and finally, the behavioral cue (TFF = 23.71). The mild depression group fixated on the gain headline first (TFF = .43), followed by the happy persons (TFF = 6.12), followed by gain statements (TFF = 6.34), followed by disease information (TFF = 10.37), followed by the neutral persons (TFF = 11.24), and finally, the behavioral cue (TFF = 20.65). The moderate to severe depression group fixated on the gain headline first (TFF = 1.71), followed by the neutral persons (TFF = 3.29), followed by disease information (TFF = 5.79), followed by the happy persons (TFF = 6.70), followed by gain statements (TFF = 9.88), and finally, the behavioral cue (TFF = 21.24).

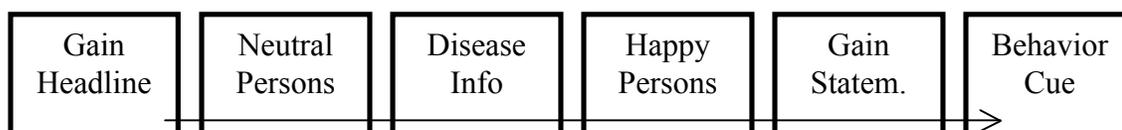
Interestingly, those in the moderate to severe depression group fixated on the happy persons and gain statements in the gain condition much later than the minimal and mild depression groups (see figure 17 through 19).



*Figure 17.* Time to First Fixation for Gain Frame and Minimal Depression.



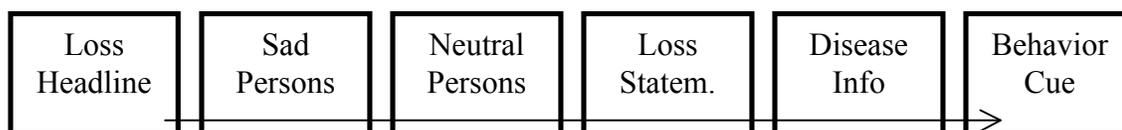
*Figure 18.* Time to First Fixation for Gain Frame and Mild Depression.



*Figure 19.* Time to First Fixation for Gain Frame and Moderate to Severe Depression.

In the loss condition, those with minimal levels of depression fixated on the loss headline first (TFF = .76), followed by the sad persons (TFF = 4.62), followed by the neutral persons (TFF = 6.20), followed by the loss statements (TFF = 7.78), followed by disease information (TFF = 14.30), and finally, the behavioral cue (TFF = 25.14). The mild depression group fixated on the loss headline first (TFF = .43), followed by the sad persons (TFF = .57), followed by the neutral persons (TFF = 5.65), followed by disease information (TFF = 9.58), followed by loss statements (TFF = 11.07), and finally, the behavioral cue (TFF = 22.96). The moderate to severe depression group fixated on the loss headline first (TFF = .72), followed by the sad persons (TFF = 1.20), followed by the neutral persons (TFF = 3.53), followed by disease information (TFF = 5.59), followed by loss statements (TFF = 6.67), and finally, the behavioral cue (TFF = 24.50).

Interestingly, the moderate to severe depression group appeared to fixate on depression disease information much more quickly in the loss message condition than the moderate and minimal depression group (see figures 20 through 22).



*Figure 20.* Time to First Fixation for Loss Frame and Minimal Depression.

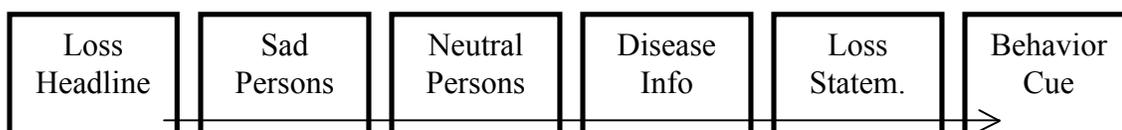


Figure 21. Time to First Fixation for Loss Frame and Mild Depression.

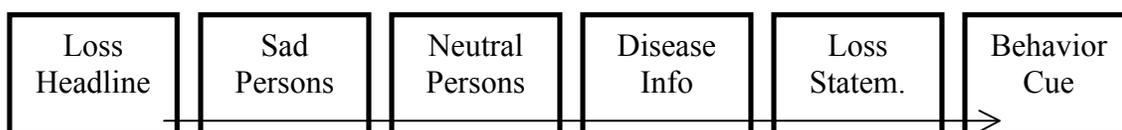


Figure 22. Time to First Fixation for Loss Frame and Moderate to Severe Depression.

**RQ 2: Do depression and message type (gain or loss) influence interpretation of gain-and loss framed help-seeking messages?** A multivariate GLM approach was used to test whether depression and message framing influenced interpretation of gain-and loss framed messages as indicated by levels of reasoned action variables. In order to test the effects of levels of depression, previous depression grouping variables (minimal depression, mild depression, and moderate to severe depression) and message condition (gain or loss) were used as independent variables and determinants of help-seeking (intentions to seek help, experiential and instrumental attitudes, descriptive and injunctive norms, and perceived behavioral control and autonomy) were used as dependent variables.

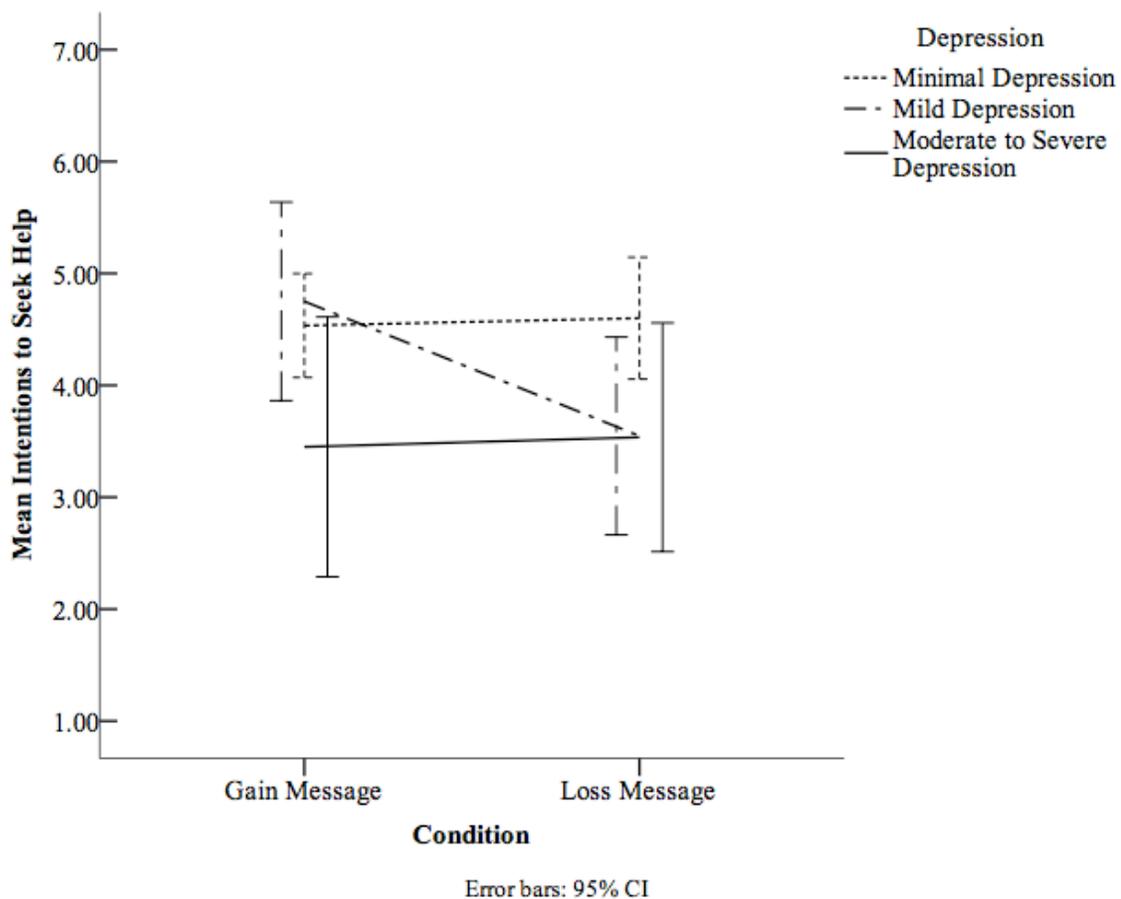
A small interaction effect of depression and message condition on help-seeking determinants was found,  $F(14, 270) = 1.64$ ;  $p = .069$ , partial  $\eta^2 = .08$  (see table 15). Multivariate results further indicated main effects for depression,  $F(14, 270) = 1.82$ ;  $p = .035$ , partial  $\eta^2 = .09$ , but not for message condition,  $F(7, 135) = .56$ ;  $p = .784$ , partial  $\eta^2 = .03$ , on help-seeking determinants.

Pointing only to meaningful differences, whereas those with minimal depression symptoms showed no distinct difference in intentions to seek help for depression after viewing the loss message condition ( $M = 4.60$ ;  $SD = 1.70$ ) and after viewing the gain- ( $M = 4.53$ ;  $SD = 1.53$ ) message, noteworthy patterns emerged for those with mild depressive symptoms. Those with mild depressive symptoms indicated higher intentions to seek help for depression after viewing the gain-framed message ( $M = 4.75$ ;  $SD = 1.78$ ) than after viewing the loss-framed message ( $M = 3.55$ ;  $SD = 1.94$ ). Interestingly, those with moderate depressive symptoms indicated slightly higher intentions to seek help for depression after viewing the loss-framed message ( $M = 3.54$ ;  $SD = 1.77$ ) than after viewing the gain-framed message ( $M = 3.45$   $SD = 1.62$ ) (see figure 23).

Table 15

*Interaction Effect of Depression and Condition on Reasoned Action Variables*

Multi-V.				Uni-V.			
D x C	F (df)	<i>p</i>	$p\eta^2$		F (df)	<i>p</i>	$p\eta^2$
	1.64 (14, 270)	.069	.08	BIntention	2.00 (2, 141)	.140	.03
				Inst.Att.	.23 (2, 141)	.794	.00
				Exp.Att.	1.08 (2, 141)	.343	.02
				Inj. Norm	1.44 (2, 141)	.241	.02
				Des. Norm	5.56 (2, 141)	.005	.07
				Perc. C.	.43 (2, 141)	.652	.01
				Perc. A.	.14 (2, 141)	.872	.00



*Figure 23.* Help-Seeking Intentions for Depression by Depression and Message Condition

Experiential attitudes showed an interesting pattern— here, those with mild depression showed higher experiential attitudes after viewing the gain-framed message whereas those with moderate to severe depression showed higher experiential attitudes after viewing the loss-framed message (see figure 24).

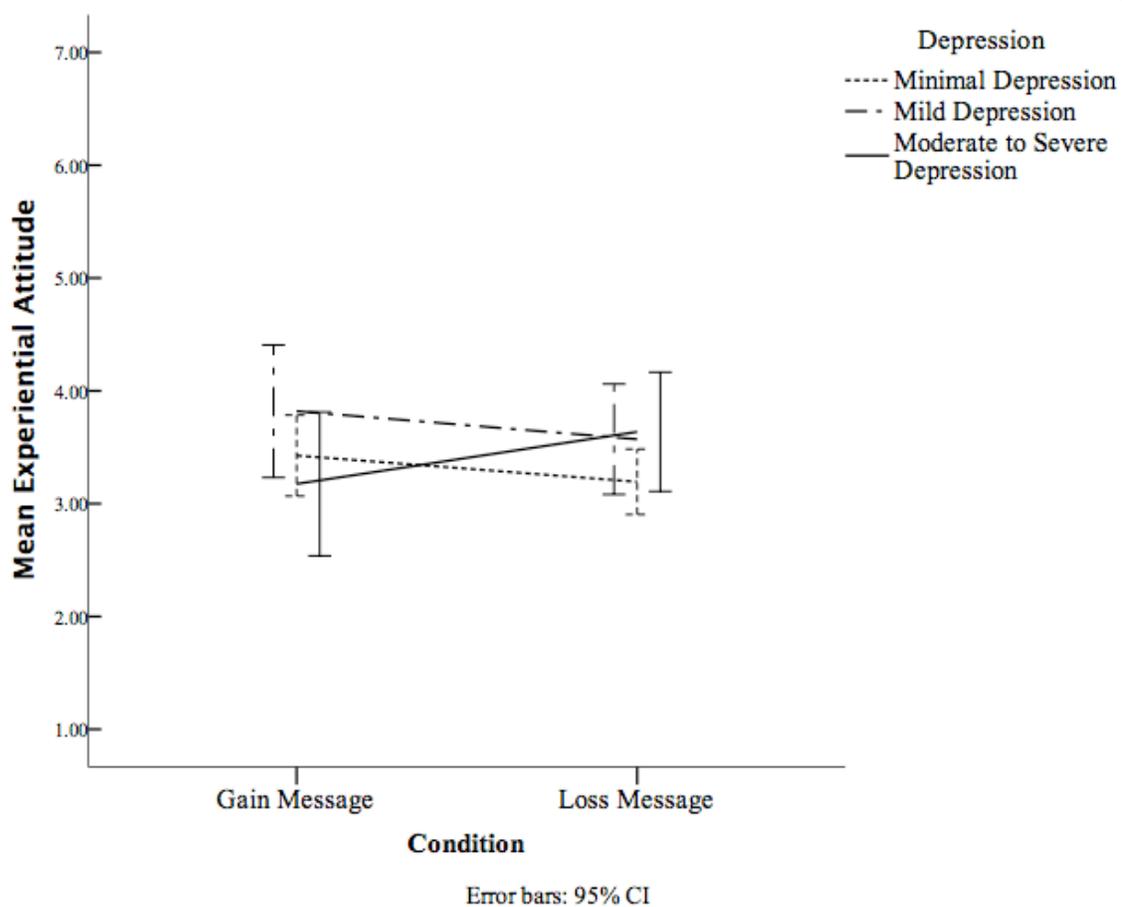


Figure 24. Experiential Attitude by Depression and Message Condition.

Similarly for descriptive norms, the mild depression group showed higher descriptive norms in the gain-framed message condition, whereas the moderate to severe depression groups showed higher descriptive norms in the loss-framed message condition (see figure 25).

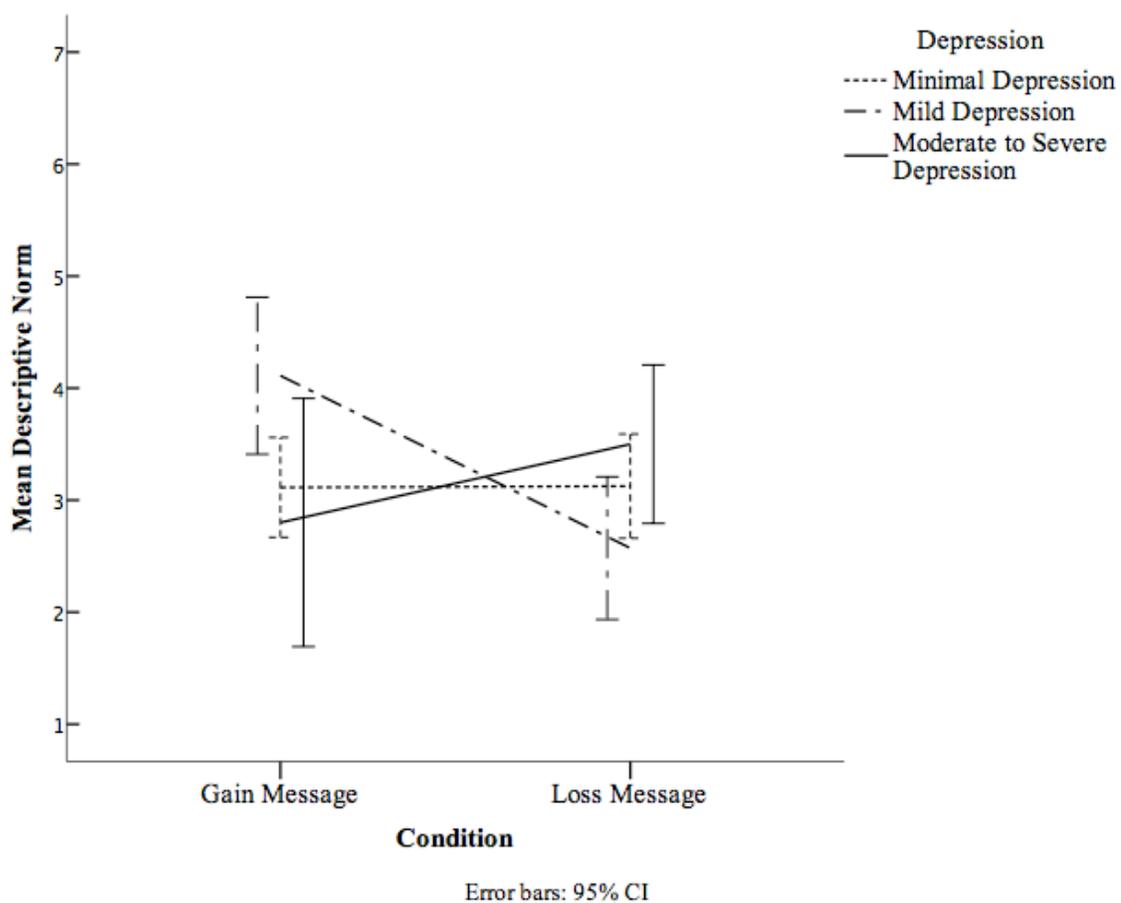


Figure 25. Descriptive Norm by Depression and Message Condition.

An interesting pattern also occurred for perceived capacity – here, the mild depression group benefitted from a loss frame whereas the moderate to severe depression group benefitted from a gain frame (see figure 26).

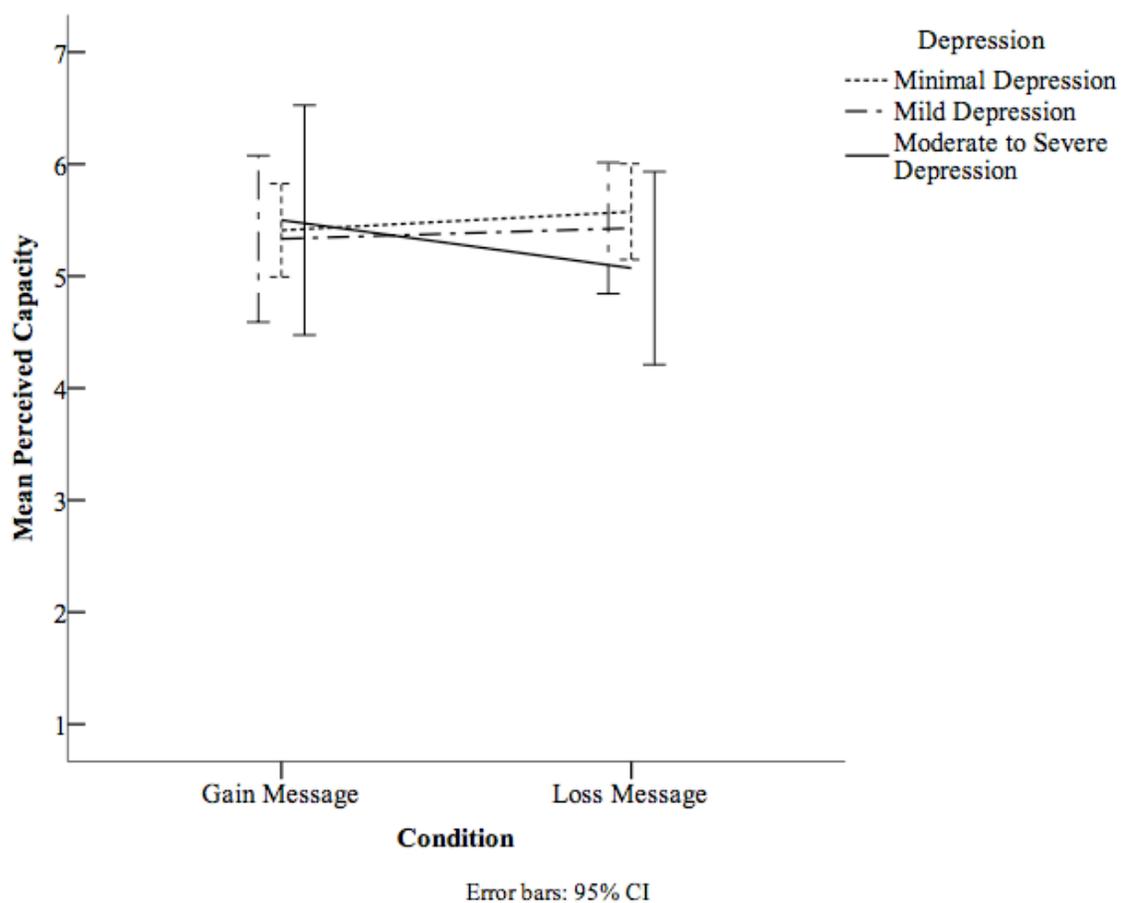


Figure 26. Perceived Capacity by Depression and Message Condition.

An overview of means and standard deviations for reasoned action variables by depression and message frame is provided below (see table 16).

Table 16

*Mean Levels of Reasoned Action Variables by Message Frame*

Dependent Variable	Depression	Message Frame			
		Gain Frame ( <i>SD</i> )	<i>n</i>	Loss Frame ( <i>SD</i> )	<i>n</i>
Intention	Minimal	4.53 (1.53)	44	4.60 (1.70)	40
	Mild	4.75 (1.78)	18	3.55 (1.94)	21
	Mod-Sev	3.45 (1.62)	10	3.54 (1.77)	14
Instrumental attitude	Minimal	5.63 (.98)	44	5.59 (1.13)	40
	Mild	5.49 (1.13)	18	5.18 (1.24)	21
	Mod-Sev	5.18 (.74)	10	4.95 (1.37)	14
Experiential attitude	Minimal	3.43 (1.18)	44	3.19 (.91)	40
	Mild	3.82 (1.18)	18	3.57 (1.08)	21
	Mod-Sev	3.18 (.89)	10	3.64 (.91)	14
Injunctive norm	Minimal	6.25 (.75)	44	6.05 (1.04)	40
	Mild	5.89 (1.18)	18	6.33 (.80)	21
	Mod-Sev	5.30 (1.57)	10	5.57 (1.45)	14
Descriptive norm	Minimal	3.11 (1.47)	44	3.13 (1.45)	40
	Mild	4.11 (1.41)	18	2.57 (1.40)	21
	Mod-Sev	2.80 (1.55)	10	3.50 (1.23)	14
Perceived capacity	Minimal	5.41 (1.37)	44	5.58 (1.37)	40
	Mild	5.33 (1.50)	18	5.43 (1.29)	21

					121
	Mod-Sev	5.50 (1.43)	10	5.07 (1.49)	14
Perceived	Minimal	5.74 (.92)	44	5.70 (1.19)	40
autonomy	Mild	5.61 (.93)	18	5.60 (1.30)	21
	Mod-Sev	5.20 (1.09)	10	5.43 (1.30)	14

*Note:* Means reflect 7-point scales.

**RQ 3: Do depression and message type (gain or loss) influence memory for gain-and loss framed help-seeking messages? *Content analysis results.***

The close reading of participants’ responses indicated that participants used different pronouns when responding to the free recall measure. For example, whereas some participants clearly identified that the material was intended for them (e.g., “the message said that I should seek help for my depression”), other participants used impersonal or other pronouns when discussing the depression help-seeking message. It was also interesting to discover how risk and reward were discussed in response to the gain-or loss-framed messages – a theoretical framework that is based on the concept of perceived risk of behavioral outcomes. In some cases, participants discussed the positive outcomes of help-seeking despite being exposed to the loss-framed help-seeking message (i.e., the message displaying the negative outcomes of not seeking help). Finally, whereas the visual affective cues displayed in the gain-and loss message seemed to be reflected in the open-ended text responses, some participants discussed negative emotions despite being assigned to the gain-framed message.

Memory for people did not differ by message condition,  $X^2 (2) = 3.90, p = .824$  or depression category,  $X^2 (4) = 4.62, p = .329$ . Whereas those with minimal depression

showed no difference in memory for people in the gain (66.7%) and loss message (65.1%), those with mild depression and moderate to severe depression showed improved memory for people in the loss message (Memory People Mild Depression 57.1%, Memory People Moderate – Severe Depression 50%) over the gain message (Memory People Mild Depression 44.4%, Memory People Moderate – Severe Depression 33.3%)

Memory for happy and sad emotions differed by message condition,  $X^2 (2) = 62.59, p < .001$ , but not by depression category,  $X^2 (4) = 3.72, p = .445$ . Overall, both the minimal and mild depression groups showed better memory for happiness than sadness, whereas the moderate to severe depression group did not differ in memory for happiness and sadness (see table 17).

Memory for gain-and loss statements differed by message condition,  $X^2 (4) = 60.05, p < .001$ , but not by depression category,  $X^2 (8) = 4.52, p = .808$ . All depression groups reported better memory for the positive outcomes of help-seeking than the negative outcomes of help-seeking, but the difference was strongest for the minimal depression group (see table 17).

Memory for behavioral recommendation differed slightly by message condition,  $X^2 (3) = 7.50, p = .058$ , but not by depression category,  $X^2 (6) = 3.45, p = .751$ . All depression groups showed better memory for the recommended help-seeking behavior in the gain-message condition (see table 17).

Memory for disease information did not differ by message condition,  $X^2 (1) = 0, p = .993$  or depression category,  $X^2 (2) = 2.51, p = .286$  (see table 17).

Table 17

*Memory for Gain-and Loss-Framed Message Condition Components by Depression*

<b>Message Frame</b>			
<b>Dependent Variable</b>	Depression	Gain Frame (% within depression)	Loss Frame (% within depression)
People (Mentions Main People in Msg)	Minimal	28 (65.1%)	26 (65.0%)
	Mild	8 (44.4%)	12 (57.1%)
	Mod-Sev	3 (33.3%)	7 (50%)
Emotion (Happy vs. Sad)	Minimal	28 (65.1%)	14 (35.0%)
	Mild	10 (55.6%)	7 (33.3%)
	Mod-Sev	3 (33.3%)	5 (35.7%)
Gain/Loss Statements (Outcomes of Help-Seeking)	Minimal	20 (46.5%)	10 (25%)
	Mild	10 (55.6%)	7 (33.3 %)
	Mod-Sev	4 (44.5%)	4 (28.6%)
Actions (Mentions Active Help-Seeking)	Minimal	33 (76.7%)	26 (65.0%)
	Mild	15 (83.3%)	10 (47.6%)
	Mod-Sev	6 (66.7%)	8 (57.1%)
Disease Information (Mentions Disease Information)	Minimal	19 (44.2%)	19 (47.5%)
	Mild	7 (38.9%)	5 (23.8%)
	Mod-Sev	3 (33.3%)	6 (42.9%)

*Computerized linguistic analysis results.* Participants' open-ended text responses to the free recall question, "What do you remember from the message you saw? Please

list all things (e.g., words, images, objects) that come to mind,” were analyzed with linguistic inquiry and word count software (LIWC, 2015).

Overall, an average of 6.83% of all participants’ text responses contained pronoun words (i.e. either personal or impersonal pronouns, or specific categorizations, such as “I,” “we,” “you,” “he/she,” and “they”). 9.66% of all participants’ text responses contained words related to affect (i.e. either general positive or negative emotion words, or specific categorizations for negative emotions, such as anxiety and sadness). Due to the nature of gain-and loss framing as focusing on positive and negative outcomes of help-seeking matched with positive and negative visual affective cues, the analysis of text responses focused on the general categorization distinguishing positive and negative emotions only.

10.06% of all participants’ text responses were drive words (i.e. words related to affiliation, achievement, power, reward, and risk). Due to the central relevance of reward and risk words in relation to gain-and loss framed health messages, analysis focused on only risk and reward words for drive.

Use of positive emotion words did not differ as a function of the interaction of message condition and depression,  $F(2, 139) = .33, p = .717, \eta^2 = .01$ . Use of positive emotion words did also not differ by depression,  $F(2, 139) = .10, p = .906, \eta^2 = .00$ , but by message condition,  $F(1, 139) = 28.83, p < .001, \eta^2 = .17$ .

Similarly, use of negative emotion words did not differ as a function of the interaction of message condition and depression,  $F(2, 139) = 1.19, p = .308, \eta^2 = .02$ . Use of negative words did also not differ by depression,  $F(2, 139) = .43, p = .652, \eta^2 = .01$  and message condition,  $F(1, 139) = 2.74, p = .100, \eta^2 = .02$ .

Findings reveal that all depression groups used positive and negative emotion words according with positive (gain) and negative (loss) framing conditions, except the mild depression group, who used slightly more negative emotion words in the gain-framed condition than negative emotion words in the loss-framed message condition (see figure 27 and 28).

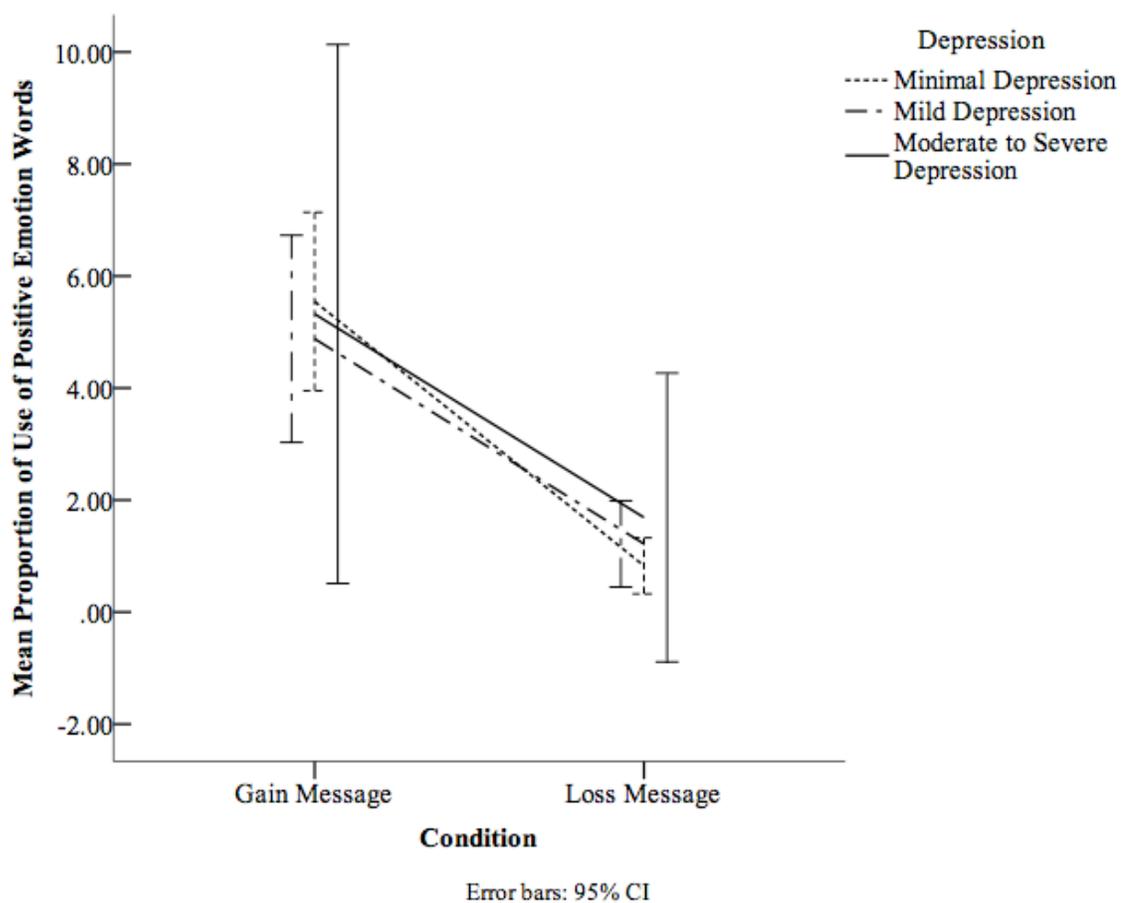


Figure 27. Mean Proportion of Use of Positive Emotion Words by Depression and Message Condition.

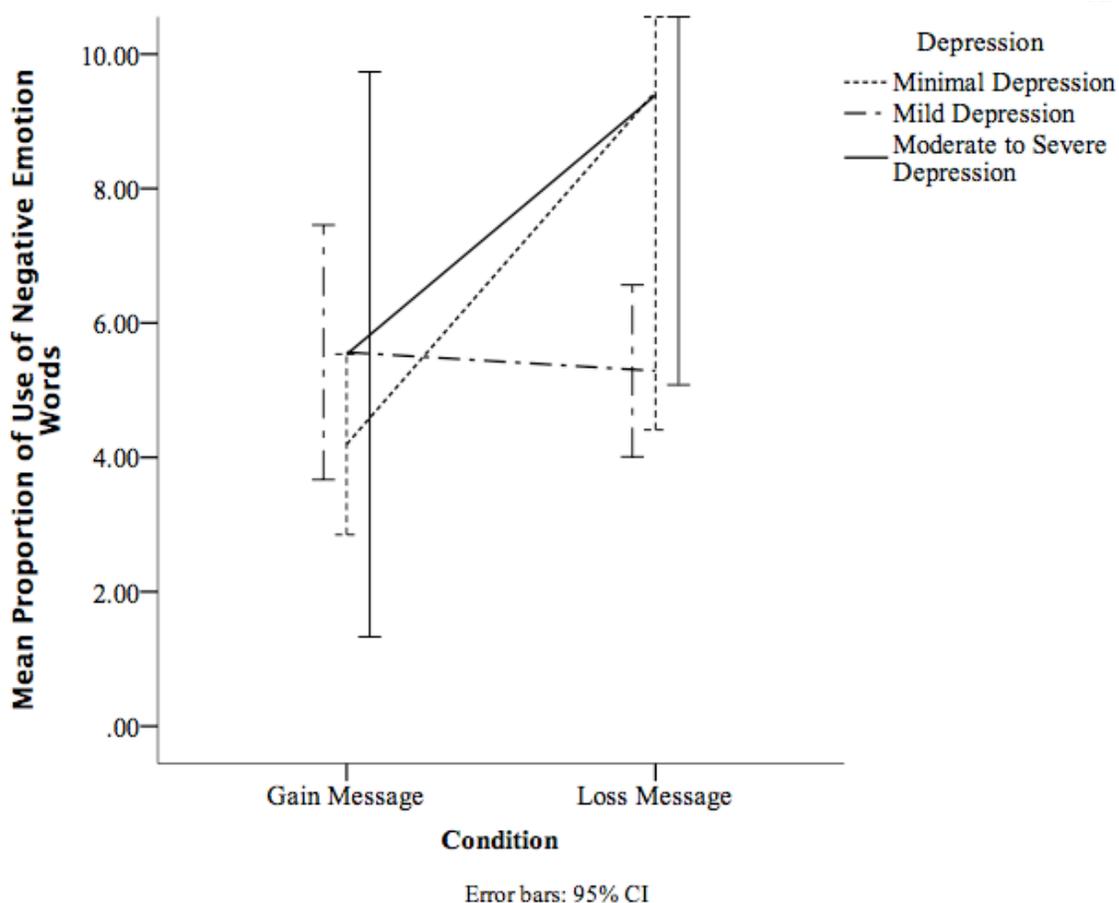


Figure 28. Mean Proportion of Use of Negative Emotion Words by Depression and Message Condition.

Use of reward words did not differ as a function of the interaction of message condition and depression,  $F(2, 139) = .69, p = .503, \eta^2 = .01$ . Use of reward words did also not differ by depression,  $F(2, 139) = .87, p = .423, \eta^2 = .01$ , but by message condition,  $F(1, 139) = 8.08, p = .005, \eta^2 = .06$ .

All depression groups used more reward words in the gain message condition, whereas the difference in use reward words in the gain message condition and loss message condition was most meaningful in the mild depression group (see figure 29).

Use of risk words, however, did differ as a function of both message condition and depression,  $F(2, 139) = 3.16, p = .045, \eta^2 = .04$ . Use of risk words did not differ by depression,  $F(2, 139) = 1.67, p = .193, \eta^2 = .02$ , but by message condition,  $F(1, 139) = 6.95, p = .009, \eta^2 = .05$ .

Whereas the minimal depression groups did not differ in use of risk words in the gain-framed message condition ( $M = .26, SD = .92$ ) and the loss-framed message condition ( $M = .24, SD = .67$ ), the mild depression group and the moderate depression group showed interesting patterns in regard to risk word usage. For the mild depression group, use of risk words was higher in the loss-framed message condition, ( $M = .69, SD = 1.40$ ) than in the gain-framed message condition, ( $M = .13, SD = .55$ ). Use of risk words increased for the moderate depression to severe depression group, as well, but the difference was remarkable – whereas the moderate to severe depression group used virtually no risk words in the gain-framed message condition, ( $M = 00, SD = 00$ ), risk word usage was high in the loss-framed message condition ( $M = 1.91, SD = 4.50$ ) (see figure 30 and table 18).

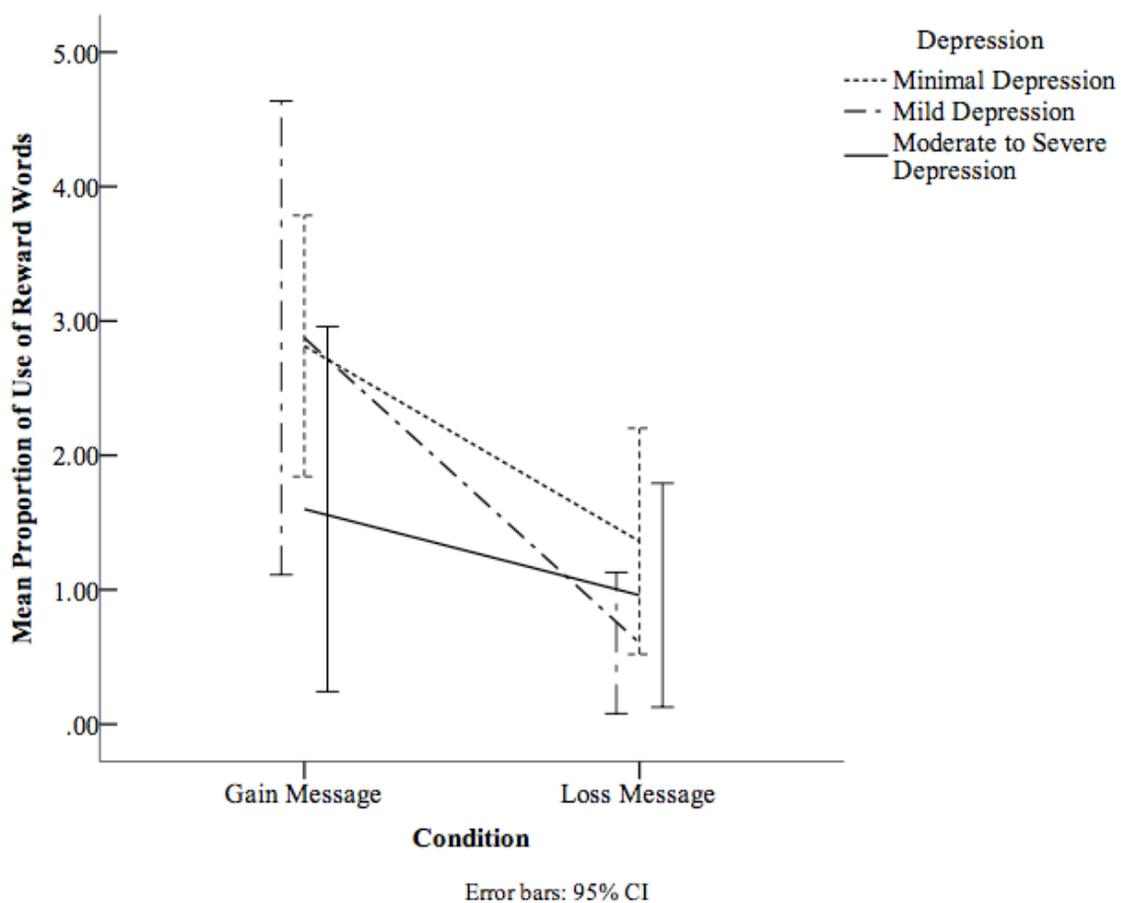


Figure 29. Mean Proportion of Use of Reward Words by Depression and Message Condition.

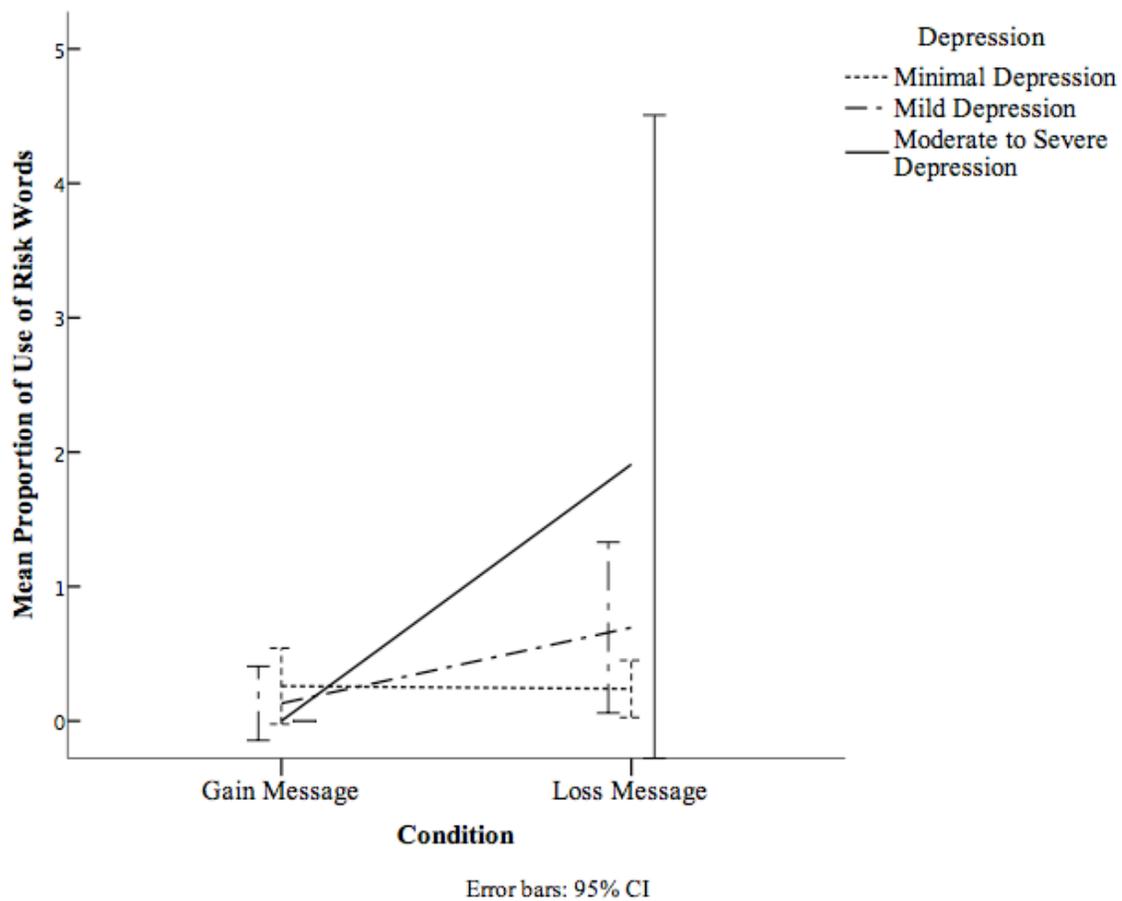


Figure 30. Mean Proportion of Use of Risk Words by Depression and Message Condition.

Table 18

Mean Proportions of Word Categories in Free Recall Measure ( $N = 154$ )

Dependent Variable	Depression	Message Frame	
		Gain Frame	Loss Frame
Positive Emotions	Minimal	5.55 (5.17)	.83 (1.57)
	Mild	4.88 (3.72)	1.22 (1.69)

	Mod-Sev	5.32 (5.32)	1.69 (4.46)
Negative Emotions	Minimal	4.19 (4.37)	9.44 (15.74)
	Mild	5.56 (3.81)	5.29 (2.81)
	Mod-Sev	5.53 (5.47)	9.39 (7.46)
Reward	Minimal	2.81 (3.16)	1.36 (2.63)
	Mild	2.87 (3.54)	.60 (1.15)
	Mod-Sev	1.60 (1.77)	.96 (1.44)
Risk	Minimal	.26 (.92)	.24 (.67)
	Mild	.13 (.55)	.69 (1.40)
	Mod-Sev	0 (0)	1.91 (4.50)

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*Note:* Means reflect percentages.

## Discussion

### Stages of Cognitive Processing

**Attention.** Overall, the present study suggests several important implications for the design of depression help-seeking messages. Health messages in general suffer from a significant disadvantage – they must break through the vast number of competing messages and get the viewer’s attention. Even when this objective is achieved and the health message is being attended to, the time window during which information is absorbed by the viewer is incredibly short. In the present study, participants viewed the depression help-seeking messages for an average of about thirty seconds. This duration time is likely influenced by the nature of the experimental setting – a controlled lab without distractions and the potential influence of the participant’s desire to fulfill the researcher’s expectations. We must assume that viewing duration is drastically shorter for health message viewing scenarios outside of this experimental setting.

Despite this realization, the present study also suggests several potential opportunities for depression help-seeking messages. Whereas viewing time decreased when depression symptoms increased, the minimal depression group viewed the help-seeking messages for the longest duration of time. This is encouraging, given the objective to reach those who suffer from depressive symptoms early and to prevent worsening of symptoms. This group of students -for which depressive symptoms might just be noticeable enough to prompt awareness but not severe enough to induce resistance to help-seeking - might be an important group to target with depression help-seeking messages. Not only can a worsening of symptoms be prevented, but members of this group could also serve as important catalysts for spreading depression health information

to those in need in their social networks.

Interestingly and contrary to expectations, there were no differences in how depression influenced attention for negative, loss-framed information and negative facial cues with one exception – the time it takes participants to fixate on message components. It appears that those low in depression are more likely than those with higher levels of depression to quickly attend to positive visuals and information if given the opportunity. Conversely, those with higher levels of depression seem to avoid such information in attention sequences. Interestingly, and potentially due to increased self-relevance, those with higher levels of depression appear to focus on disease information more quickly than those with lower levels of depression when negativity is salient. These patterns are suggestive of both a cognitive bias for positive information among those with lower levels of depression, as well as a cognitive bias for negative information among those with higher levels of depression.

The important difference for attention processes influenced by depression might not only be the valence of information, but also the required level of processing. For example, mean levels indicate that those with low levels of depression focused on positive information that allowed for quick and easy processing much more often than the high depression group – especially in regard to the headline and visual. The high depression group, on the contrary, appeared to very quickly identify actual text-based information in the help-seeking messages. This group fixated on disease information in the gain and loss message conditions much more quickly than the low depression group. This finding could have implications for cognitive processing mechanisms as depicted by the elaboration likelihood model (Cacioppo & Petty, 1984). It is possible that those with

high levels of depression recognized the self-relevance of the depression help-seeking message, which increased the desire for substantial and strong arguments and information (Petty & Cacioppo, 1986; Petty & Cacioppo, 1990; Petty, Haugtvedt, & Smith, 1995; Petty, Wegener, & Fabrigar, 1997), whereas those with low depression extracted useful information by identifying the shortcuts to message processing – the headline and visual. Independent of message framing, higher levels of depression could have also induced the more systematic and careful processing of information (Gollan et al., 2008; Petty et al., 1993).

**Interpretation.** Interestingly, no meaningful effects were found for interpretation of gain-and loss-framed messages for the minimal depression group. Despite viewing the depression help-seeking messages for the longest duration of time, it does not appear that message framing meaningfully influences interpretation for those with such low levels of depression. Message framing seemingly starts to make a difference starting with those who suffer from mild symptoms of depression. Realizing that messages rarely shape intentions to engage in a health behavior directly, the strong effects on intentions to seek help as shaped by message framing were surprising. Whereas the mild depression group indicated higher intentions to seek help after viewing the gain-framed message than the moderate depression group, these effects were reversed for the loss-framed message. Here, those with moderate depression indicated higher intentions to seek help after viewing the loss-framed message than those with mild symptoms of depression – raising the means for intentions to seek help above the scale midpoint. The persuasive advantage of the gain-framed message for the mild depression group and the loss-framed message for the moderate depression group was largely confirmed for the remaining reasoned

action components.

It could be the case that perceived level of risk in regard to help-seeking outcomes plays an important role in these differences. Perceived risk refers to outcome certainty and has previously been applied in the context of gain-and loss framing. More specifically, perceived risk has been used to distinguish health behaviors into either detection or prevention behaviors. Detection behaviors are high in perceived risk, because they typically involve high outcome uncertainty (e.g., breast cancer screening) and prevention behaviors are low in perceived risk, because they typically lead to certain outcomes (e.g., sunscreen use).

Applied to the present research, if help-seeking for depression is expected to lead to a certain outcome, such as receiving professional advice on how to improve mental health by exercising, improving sleep schedules and using stress management techniques, perceived risk would be low. If, however, a person were not sure if a visit with a health professional might lead to an unpleasant depression diagnosis, perceived risk would be high. Although not consistently confirmed in the literature and therefore recently called into question (O'Keefe & Jensen, 2007; O'Keefe & Jensen, 2009), gain-framing is believed to be more effective for prevention behaviors, which are low in perceived levels of risk, whereas loss-framing is believed to be more effective for detection behaviors, which are high in perceived levels of risk.

The present research sought to test the persuasive advantage of gain-and loss framing for help-seeking messages and those individuals who are affected by depression. To date, no study has investigated whether depression influences the levels of perceived risk for gain-and loss framed depression help-seeking messages. The current results

support the conclusion that the gain frame is more persuasive for prevention behaviors (i.e. help-seeking for those with low levels of depression) and that the loss frame is more persuasive for detection behaviors (i.e. help-seeking for those with high levels of depression). Furthermore, it also appears that negative information improved feelings about help-seeking and perceptions that important others would seek help themselves among those with higher levels of depression – determinants of help-seeking that were generally low and require improvement. These findings suggests that contrary to expectations, matching negatively biased cognition with negative information can indeed lead to positive outcomes, rather than additive negative effects and unintended negative consequences.

**Memory.** Overall, those low in depression showed slightly better memory for happy people and emotions than sad people and emotions, whereas those high in depression showed better memory for sad people and emotions. Interestingly, all depression groups reported better memory for the positive outcomes of help-seeking than the negative outcomes of not seeking help. Whereas there were no differences in memory for disease information in the loss-framed and gain-framed message conditions among those with low depression, those with high depression reported better memory for disease information in the loss condition than in the gain condition.

These findings suggest a positivity bias for those with lower levels of depression and a negativity bias for those with higher levels of information – biases that might also influence processing style, and ultimately, information storage in memory. Improved memory for disease information among those with higher levels of depression could indicate increased message relevance for those who did indeed suffer from depression

when confronted with a message that encouraged help-seeking for depression.

Remarkably, those with higher levels of depression appeared to be highly affected by levels of perceived risk. Using their own words in direct response to gain-and loss – framed depression help-seeking messages, the moderate depression group used risk words much more often in response to the loss-framed message than in response to the gain-framed message. The mild depression group appears to be affected by perceived risk as well, but to a lesser extent. There were no differences in use of risk words in response to the gain- and loss framed messages for the minimal depression group, indicating once again that meaningful effects of message framing only seemed to emerge starting with mild symptoms of depression.

The high levels of perceived risk among those with moderate depression after viewing the loss-frame message could have several potential reasons. For one, most students in the current sample indicated that they have not previously sought help for depression. This could mean that the outcomes of help-seeking are perceived to be particularly risky for those who need help the most. Perhaps the potential of receiving a formal diagnosis, a label that carries social stigma, is especially unsettling for this moderate depression group. The uncertainty could also refer to not knowing what actually happens during a visit with a mental health professional. Negative rumination, as one symptom of depression, could induce multiple ‘what – if scenarios’ in this regard. For example, rumination negativity and uncertainty could range from the perceived inability to describe depression symptoms accurately, to the anticipated reaction of the health professional, to suggested treatment options that might include medication. All of these questions raise levels of uncertainty and perceived risks of help-seeking.

Overall, barring careful interpretation of correlational findings, perceived risk could be the explanatory mechanisms for the positive effects of the loss-framed message on help-seeking intentions for those who are moderately depressed. Arguably, because perceived risk of help-seeking might be lower for those who only suffer from mild depression symptoms, gain frames could be more effective for this group, instead. Returning to the prevention and detection behavior categorization (Rothman et al., 2006), the present research suggests that help-seeking for depression is likely perceived to be a prevention behavior by those who suffer from lower levels of depression and a detection behavior by those who suffer from higher levels of depression. Therefore, a gain-framed depression help-seeking message should be used for early interventions targeting those suffering from less severe depression symptoms, whereas a loss-framed depression help-seeking message should be utilized for those who urgently need help for depression.

In order to make these choices, interventions must ultimately be informed by specific knowledge regarding the target audience. Messages must be tailored and targeted in correspondence with levels of depression severity –knowledge that might aid in constructing health messages that can induce behavior change in holistic ways. Different message strategies could work together holistically, by influencing potential opinion leaders and catalysts of stigma reduction of help-seeking for depression via gain-framed messages, or directly, by increasing help-seeking and potentially saving lives for those with high levels of depression via loss-framed messages.

## Limitations

This research study is not without limitations. Most significantly affecting the patterns of results is the lack of adequate power in each of the experimental cells. Depression categories were combined into minimal, mild, and moderate to severe depression groups in order to detect potential differences in effects and aid comparisons of unequal sample sizes. Ideally, a study sample would provide enough cases for each level of depression categories (no, minimal, mild, moderate, moderately severe, and severe) in order to conduct meaningful comparisons between levels of depression.

The issue of power most significantly affected human content analyses of participants' open-ended responses. Here, cases for each of the coding categories as provided by groups of depression were lower than desired. Therefore, assumptions necessary for inferential statistics (i.e. logistic regression) were not supported. Given the multiple methods employed in this study, each method also carried limitations. For example, it is plausible that an in-person lab experiment led to certain levels of social desirability, especially in regard to the high levels of attention paid to health messages (an average of 32.76 seconds) and low levels of reported depression symptoms (an average of 4.88, indicating mild depression). Whereas the high levels of attention are expected, the reported low levels of depression may require improvements in subsequent study procedures. For example, using the departmental subject pool may have led participants to feel less comfortable in reporting depression symptoms, despite reassurance of confidentiality. Furthermore, despite notable findings in regard to use of risk and reward words among those who suffer from depression in response to gain-and loss framed messages, it is important to note the high variances in proportion to reported

mean levels. Linguistic software does not control for length of text responses, which influences the generally large variances in results of such computerized linguistic analyses.

## CHAPTER IV

### DISCUSSION

Due to its increase in prevalence and wide array of health risk implications, depression is currently the leading cause of disability worldwide (World Health Organization, 2016). Depression is not only a major contributor to the overall global disease burden, but it is also the dominant risk factor for suicide in the U.S. – especially among young adults aged 15-34 years (Center for Disease Control, 2015). Further suggesting a pressing need to reach young adults with health interventions, the National Institute of Mental Health (2015) indicates that most lifetime mental illnesses show their first signs before the age of 24. Igniting a breeding ground of risk factors for the onset of depression, young adults in this age group are often college students who are exposed to various academic, social, and psychological and emotional stressors at this stage in their life. Statistics indicating a complete lack of or long delay in help-seeking (Eisenberg, Golberstein, & Gollust, 2007; Hunt & Eisenberg, 2010) in this age group raises important questions about how to best motivate depressed college students to seek help with effective health messages.

Among other symptoms, depression is marked by a presence of feelings of sadness and emptiness, often bringing about physical and cognitive changes that significantly and negatively impact one's emotions, cognitive abilities, and overall health. Crucially important for finding the best ways of promoting help-seeking, depression is tied to negative and self-critical ruminations, often leading to severely diminished feelings of self worth. Unfortunately, those biased beliefs about the self are not isolated, flawed beliefs. Depressed cognition represents a network of biases that change the ways in which

depressed individuals perceive themselves, the future, and the world in general (Beck, 1976). This distorted view of reality changes ways in which depressed individuals select, interpret and apply information to be congruent with a negative view of the self (Krantz & Gallagher-Thompson, 1990).

Despite recent efforts to disseminate help-seeking and suicide prevention messages, there is currently a lack of evidence supporting the effectiveness of such messages. The few empirical studies that have experimentally tested depression health messages have recently warned that depression may complicate and potentially even reverse, responses to health message that we might expect from other populations. Because health communication principles have long been guided by the goal to tailor health messages to the unique characteristics of the target audience and target these individuals accordingly in order to increase effectiveness, investigations of how depression might influence health message processing are crucially needed.

There appears to be a lack in evidence of how to best tailor messages according to depressed cognitive processing of health information – a process that was the focus of the present research. The present research tested both framing strategies that connect with cognitive errors of depression (i.e. responsibility framing and gain-and loss framing) and the influence of depression's severity on key outcomes relevant to the persuasion process (i.e. attention, interpretation, and memory for help-seeking messages). Ultimately, the goal of this research was to contribute practical implications for the design of depression help-seeking messages, as well as investigate theoretical implications for current communication science principles applied to depression by integrating the public health, psychology, and communication literature.

## **Summary and Discussion of Findings**

Due to negatively skewed beliefs about the self, the future, and the world in general, the current research tested whether such beliefs interact with different framing strategies (i.e. responsibility framing and gain-and loss framing) and produce outcomes at various stages of the persuasion process (i.e. attention to depression help-seeking messages, interpretation of information related to help-seeking, memory for depression help-seeking messages). Whereas concrete evidence exists for the effects of negative interpretations of real and hypothetical events for those who suffer from depression, less concrete evidence exists for attention and memory processes – processes that are integral parts of the persuasion process. Due to beliefs about a flawed self, the present research was conducted with the expectation that self-relevant help-seeking information would activate such negative beliefs and influence message effectiveness despite positive framing strategies. (i.e. avoiding low responsibility framing, Lienemann et al., 2013; and loss-framing, Rothman et al., 2006).

The present research confirmed in two studies that as depression symptoms increase, the likelihood of help-seeking decreases, indicating a dire need for effective messages prompting timely help-seeking for depression symptoms. Interestingly, across both studies, it appears that instrumental attitudes (i.e. the evaluation of help-seeking in terms of positive and negative attributes) tend to be higher than experiential attitudes (i.e. the evaluation of help-seeking in terms of positive or negative affective experiences). Furthermore, injunctive norms (i.e. the extent to which important referents are expected to approve or disapprove the individual's help-seeking) appear to be higher than descriptive norms (i.e. the extent to which important referents seek help themselves).

Perhaps most surprisingly, both perceived capacity (i.e. the perceived ability to seek help) and perceived autonomy (i.e. the extent to which the decision to seek help is perceived to be up to the individual) are quite high for help-seeking for depression, indicating that across levels of depression, participants indicated no capacity or autonomy barriers to seeking help for their depression. In fact, the present research indicates that instrumental attitudes and to a lesser extent, experiential attitudes and descriptive norms, may be important predictors of help-seeking intentions. It might therefore be useful to focus health communication efforts mostly on persuading those with higher levels of depression that help-seeking for depression does indeed lead to positive outcomes and is therefore a useful behavioral choice. Since instrumental attitudes were already high in the present studies, depression help-seeking messages may only need to cue and reinforce those already existing attitudes for those who suffer from depression.

### **Attention**

Given long overall exposure times to gain-and loss depression help-seeking messages, the present research detected slight differences for attention processes based on depression severity. Those low in depression tended to fixate on the happy people in the message more quickly, more often, and for longer durations than those high in depression. Interestingly, mood congruence (i.e. low depression and gain-framing and high depression and loss-framing) appeared to influence how quickly participants fixated on disease information. Due to a potentially higher cognitive match and increased self-relevance, those high in depression fixated on disease information much more quickly than those with low depression in the loss condition. The opposite effect was found for those low in depression. This group fixated on disease information much more quickly in

the gain versus the loss condition.

These findings have important implications for our understanding about how depression influences attention for depression help-seeking messages. The findings that those high in depression have a tendency to return to or dwell on negative information with longer exposure times could not be supported in this research. It was, however, the case that differences were detected for the positive information. Here, those low in depression viewed positive information longer and more often than those high in depression. This finding is consistent with previous studies that found associations between depression and reduced attention to happy faces, indicating a potential avoidance behavior (Bradley et al., 1998; Bradley et al., 2000). The current research also found that a match between mood and framing lead to quicker attention to disease information among those who are depressed. Potentially serving as a reference cue, disease information could have served as indicator for whether the mood-congruent message is relevant to the participant.

### **Interpretation**

Interpretation processes were tested for two types of framing (i.e. responsibility framing and gain-and loss framing), in order to produce meaningful insights about the behavioral target (i.e. help-seeking) as it relates to framing techniques. Interestingly, whereas responsibility framing did not make a difference in how depressed and non-depressed individuals interpreted information related to help-seeking for depression, gain-and loss framing did. Clear evidence for the persuasive advantage of gain-framed information for those low in depression and loss-framed information for those high in depression were found – a loss-framed message increased intentions to seek help for

those who were depressed. The only exceptions to this finding were injunctive norms (i.e. the extent to which important referents are expected to approve or disapprove the individual's help-seeking) and perceived capacity (i.e. the perceived ability to seek help), which were higher in the loss-message condition among those with low levels of depression, as well as instrumental attitude and perceived capacity, which were higher in the gain-framed condition among those who were depressed.

Interestingly, framing effects relevant to interpretation processes only took place starting with mild depression. It could be the case that depression symptoms are not significant enough at this level to meaningfully influence the ways in which positive and negative information is interpreted. This is important, because this finding implies that message strategies should truly be altered once those higher in depression symptoms become the intended target of health messages.

The greater chance of negative interpretations among those who are depressed (Wisco, 2009) were only confirmed for framing techniques that were explicit in valence for gain-and loss framing. Despite the lack of direct testing of schema-activation, it could be the case that the three types of responsibility framing (i.e. low responsibility, no responsibility, and information only) were too weak to activate depressed cognition. Gain-and loss-framed messages in the present, however, were explicit in positive and negative valence and further included a portrayal of happy and sad faces, which might overpower the effects of textual components.

## **Memory**

Previous studies in psychology produced robust evidence for explicit memory biases for those who are depressed. Such biases were found in the present study for

memory for people, emotions, and disease information. Whereas those low in depression remembered people equally well in both messages, those high in depression showed improved memory for sad people versus happy people. Furthermore, those high in depression showed much better memory for disease information in the loss-framed message condition, potentially lending support to the scanning for self-relevant information discussed earlier. Interestingly, no difference in memory was found for help-seeking outcome statements related to help-seeking according to depression.

Perhaps the most important findings were the linguistic properties of free memory textual responses. Suggesting a potentially crucial explanatory factor for the persuasive advantage of mood-matched gain-and loss framing, perceived risk and reward words differed significantly between messages and levels of depression. Once again only producing such effects starting with mild levels of depression, the proportion of use of risk words was increased in the loss-framed message condition –especially for those who were moderately depressed. A similar drastic difference was found for the use of reward words for the mild depression group in the gain-framed message condition. Clearly, these patterns of results indicate that risk and reward are important mechanisms that determine the relative persuasive advantage of gain-and loss-framing for levels of depression.

Connecting these findings with cognitive psychology, it could be the case that those with lower levels of depression respond more favorably to rewards, whereas those with higher levels of depression respond better to punishment via perceived risk, especially for help-seeking behavior. Integrating this finding with current principles in communication sciences, this underscores the assumptions that help-seeking for depression acts as a prevention behavior among those with low levels of depression and thus making a gain-

framing approach more effective in order to prompt help-seeking. In turn, help-seeking for depression likely acts as a detection behavior among those with high levels of depression and thus making a loss-framing approach more effective in order to prompt help-seeking. These results lend support to the previous conceptualizations and predictions for detection and prevention behaviors (Rothman et al., 2006) – even for populations affected by cognitive errors.

### **Limitations**

There are a few crucial limitations to the present research. First, whereas the present research focused on college students, current samples lacked variance in levels of depression. The difference in detected depression statistics in the online study versus the in-person lab experiment also indicates that in-person studies might inherently suffer from the influence of social desirability and stigma of depression. Participants might be less likely to report depression symptoms in fears of being labeled or found out – a belief that has been identified among depressed individuals even for highly confidential medical information (Czyz et al., 2013; Gulliver et al., 2010).

Second, the present studies focus on the discrete behavior of professional help-seeking only. As indicated earlier, the landscape of mental illness and approaches to positive coping with depression symptoms are complex and vary greatly by person, environment, and type of mental illness. Providing only a snapshot of only one of many behavioral recommendations, the present research prioritized the testing of cognitive processes relevant to depression help-seeking messages.

The limitations of each individual method used in the present research highlights the usefulness in employing a multi-method approach for complex targets of research,

such as depression. Findings can be triangulated by not solely relying on self-report measures, but by validating and enriching the quality of findings by analyzing participants' eye movements and linguistic responses. In doing so, the present research found substantial evidence for the role of perceived levels of risk in determining under what circumstances help-seeking for depression is considered a detection or prevention behavior.

### **Suggestions for Future Research**

Given the difficulty in conducting recruitment strategies focusing on levels of depression, future research could benefit from the solicitation of clinical samples and non-clinical samples in this age group to reach sufficient power for analyses comparing each depression group. Recruiting such samples might also partially alleviate the influence of social desirability on reporting depression symptoms.

Future investigations should further provide a more nuanced approach to testing different help-seeking behaviors for three main reasons. First and foremost, the gap from suffering in silence to making an appointment with a health professional may simply be perceived as too overwhelming and risky by those who are depressed. Second, due to inconsistencies in epidemiology studies, there is currently an increase in general help-seeking for and severity of mental disorders on college campuses. Whereas professional help-seeking is still a valuable approach to coping with depression symptoms and potentially saving lives, current on-campus resources are limited and depressed students may have to wait months for their first appointment. A shift in focus to other positive behaviors, such as stress reduction techniques, a healthy diet, and exercise might therefore be useful for health promotion messages, as those behaviors carry less stigma

and are more practical when an interaction with a health professional is delayed.

Third, research has recently pointed to the value of such alternative behaviors, not only in providing temporary coping skills, but leading to beneficial long-term effects that might outperform traditional talk therapy or medication treatment. Clearly, a more nuanced understanding regarding the effectiveness of different treatment techniques cannot be provided in the present research, but there is evidence to suggest that solely focusing on help-seeking is not sufficient when investigating practical implications of how to help college students cope with depression.

Contributing to the complex pattern of depression and help-seeking among college students are the influencing factors of other related disorders (e.g., anxiety, alcohol abuse, and other physical ailments). Future research should be inclusive of the effects of such disorders on persuasion processes for different types of behaviors (e.g., exercise), especially given the perceived utility in providing relief for a range of symptoms (e.g., depression and cardiovascular disease).

Future studies should also more closely examine how depressed individuals construe help-seeking behavior in terms of its determinants. For example, more knowledge is needed to inform discrete depression help-seeking attitudes, descriptive norms, and perceived behavioral control beliefs in a college student population. Whereas the present research identified the important role of instrumental attitudes in influencing intentions to seek help, it cannot speak directly to what those unique attitudinal beliefs look like in the current sample. This knowledge would ultimately inform which underlying beliefs depression help-seeking messages should reinforce or change in order to prompt help-seeking for depression.

Another interesting avenue for future research would be the investigation of how a different dosage of positivity and negativity cues in depression help-seeking messages lead to differential effects. Studies on gain-and loss framing, for example, could manipulate the levels of positivity and negativity portrayed in depression help-seeking messages and detect at which levels certain effects occur. Potential non-linear effects could not be detected in this sample, however, it is plausible that there is a “sweet spot” for levels of negativity and positivity based on levels of depression in order to increase message effectiveness. Findings would solve ethical questions regarding how strong loss messages need to be in order to be effective for those who suffer from depression.

## REFERENCES

- Abramson, L. Y., Seligman, M. E., & Teasdale, J. D. (1978). Learned helplessness in humans: Critique and reformulation. *Journal of Abnormal Psychology, 87*(1), 49-74. doi:10.1037/0021-843X.87.1.49.
- Aiken, L. S., & West, S. G. (1991). *Multiple regression: Testing and interpreting interactions*. Newbury Park, CA: Sage.
- Ajzen, I. (1985). From intentions to actions: A theory of planned behavior. In J. Kuhl & J. Beckmann (Eds.), *Action control: From cognition to behavior* (11–39). Berlin, Heidelberg: Springer.
- Albarracín, D., McNatt, P. S., Klein, C. T. F., Ho, R. M., Mitchell, A. L., & Kumkale, G. T. (2003). Persuasive communications to change actions: An analysis of behavioral and cognitive impact in HIV prevention. *Health Psychology, 22*(2), 166–177. Retrieved from <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4803280/>.
- American College Health Association (2008). *American College Health Association-National College Health Assessment II: Reference Group Executive Summary Fall 2011*. Retrieved from: [http://www.acha-ncha.org/docs/ACHA-NCHA\\_Reference\\_Group\\_Report\\_Fall2008.pdf](http://www.acha-ncha.org/docs/ACHA-NCHA_Reference_Group_Report_Fall2008.pdf).
- American College Health Association (2011). *American College Health Association-National College Health Assessment II: Reference Group Executive Summary Fall 2011*. Retrieved from: [http://www.acha-ncha.org/docs/ACHA-NCHA-II\\_ReferenceGroup\\_ExecutiveSummary\\_Fall2011.pdf](http://www.acha-ncha.org/docs/ACHA-NCHA-II_ReferenceGroup_ExecutiveSummary_Fall2011.pdf).
- American Psychiatric Association (n.d.). *Severity Measure for Depression – Age 11-17*. Retrieved from <http://www.psychiatry.org/File%20Library/Practice/DSM/DSM-5/SeverityMeasureForDepressionAdult.pdf>.
- American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). Arlington, VA: American Psychiatric Publishing.
- Anderson, J. E., Michalak, E. E., & Lam, R. W. (2002). Depression in primary care: Tools for screening, diagnosis, and measuring response to treatment. *British Columbia Medical Journal, 44*(8), 415-419. Retrieved from <http://www.bcmj.org/article/depression-primary-care-tools-screening-diagnosis-and-measuring-response-treatment>.
- Apanovitch, A. M., McCarthy, D., & Salovey, P. (2003). Using message framing to motivate HIV testing among low-income, ethnic minority women. *Health Psychology, 22*(1), 60-67. doi:10.1037/0278-6133.22.1.60
- Armitage, C. J., & Conner, M. (2001). Efficacy of the theory of planned behaviour: A meta-analytic review. *British Journal of Social Psychology, 40*(4), 471–499. doi:10.1348/014466601164939.
- Ashby, F. G., Isen, A. M., & Turken, A. U. (1999). A neuropsychological theory of positive affect and its influence on cognition. *Psychological Review, 106*(3), 529-550. doi:10.1037/0033-295X.106.3.529
- Banaji, M. R. & Greenwald, A. G. (2013). *Blindspot: Hidden biases of good people*. New York, NY: Delacorte Press.

- Bargh, J. A. (1982). Attention and automaticity in the processing of self-relevant information. *Journal of Personality and Social Psychology*, *49*, 1040-1053. <http://dx.doi.org/10.1037/0022-3514.43.3.425>.
- Barney, L. J., Griffiths, K. M., Jorm, A. F., & Christensen, H. (2006). Stigma about depression and its impact on help-seeking intentions. *Australian and New Zealand Journal of Psychiatry*, *40*(1), 51–54. doi:10.1111/j.1440-1614.2006.01741.x.
- Bartels R., Elo, L., & Rothman, A. (2004). An analysis of how construal of inoculation interacts with message-based framing appeals. Paper presented at the annual meeting of the American Psychological Society, Chicago, IL.
- Beck, A. T. (1967). *Depression: Causes and treatment*. Philadelphia: University of Pennsylvania Press.
- Beck, A. T. (1976). *Cognitive Therapy and the Emotional Disorders*. New York: International Universities Press.
- Beer, J. S. (2012). This time with motivation: The implications of social neuroscience for research on motivated self- and other-perception (and vice versa). *Motivation and Emotion*, *36*(1), 38–45. doi:10.1007/s11031-011-9259-0
- Berelson, B. (1952). *Content analysis in communication research*. New York, NY: Free Press.
- Blaine, B., & Crocker, J. (1993). Self-esteem: The puzzle of low self-regard. In R. F. Baumeister (Ed.), (pp. 55–85). Boston, MA: Springer US. doi:10.1007/978-1-4684-8956-9\_4.
- Blaney, P. H. (1986). Affect and memory: A review. *Psychological Bulletin*, *99*(2), 229-246. doi:10.1037/0033-2909.99.2.229.
- Blank, M. B., & Hennessy, M. (2012). A reasoned action approach to HIV prevention for persons with serious mental illness. *The ANNALS of the American Academy of Political and Social Science*, *640*(1), 173–188. doi:10.1177/0002716211424711.
- Boelen, P. A., Van Den Hout, M. A., & Van Den Bout, J. (2006). A cognitive-behavioral conceptualization of complicated grief. *Clinical Psychology: Science and Practice*, *13*(2), 109–128. doi:10.1111/j.1468-2850.2006.00013.x.
- Bolton, J. M., Belik, S. L., Enns, M. W., Cox, B. J., & Sareen, J. (2008). Exploring the correlates of suicide attempts among individuals with major depressive disorder: Findings from the national epidemiologic survey on alcohol and related conditions. *Journal of Clinical Psychiatry*, *69*(7), 1139–1149. 18517287.
- Boynton Health Service (2015). 2015 College Student Health Survey, University of Minnesota – Twin Cities Students Report. Retrieved from [http://www.bhs.umn.edu/surveys/survey-results/2015/UofMTwinCities\\_CSHSReport\\_2015.pdf](http://www.bhs.umn.edu/surveys/survey-results/2015/UofMTwinCities_CSHSReport_2015.pdf).
- Bradley B. P., Mogg K., Falla S.J., Hamilton L.R. (1998). Attentional bias for threatening facial expressions in anxiety: Manipulation of stimulus duration. *Cognition and Emotion*, *12*, 737–753. Doi: 10.1080/026999398379411.
- Bradley B. P., Mogg K., Millar N. (2000). Biases in overt and covert orienting to emotional facial expressions. *Cognition and Emotion*, *14*, 789–808. Doi: 10.1080/02699930050156636.

- Bradley B. P., Mogg K., White J., Groom C., de Bono J. (1999). Attentional bias for emotional faces in generalized anxiety disorder. *British Journal of Clinical Psychology*, 38, 267–278. doi: 10.1348/014466599162845.
- Brickman, P., Rabinowitz, V. C., Karuza, J. J., Coates, D, Cohn, E, & Kidder, L. (1982). Models of helping and coping. *American Psychologist*, 37(4), 368–384. doi:10.1037/0003-066X.37.4.368.
- Briley, M., & Lépine. (2011). The increasing burden of depression. *Neuropsychiatric Disease and Treatment*, 7(Suppl 1), 3. doi:10.2147/NDT.S19617.
- Buchanan, J. L. (2012). Prevention of depression in the college student population: A review of the literature. *Archives of Psychiatric Nursing*, 26(1), 21–42. doi: <http://dx.doi.org/10.1016/j.apnu.2011.03.003>.
- Burleson, B. R. (1992). Taking communication seriously. *Communication Monographs*, 59(1), 79–86. doi:10.1080/03637759209376250.
- Burns, J., & Birrell, E. (2014). Enhancing early engagement with mental health services by young people. *Psychology Research and Behavior Management*, 7, 303–312. <http://doi.org/10.2147/PRBM.S49151>.
- Burt, D. B., Zembar, M. J., & Niederehe, G. (1995). Depression and memory impairment: A meta-analysis of the association, its pattern, and specificity. *Psychological Bulletin*, 117(2), 285-305. doi:10.1037/0033-2909.117.2.285.
- Carey, J. (1989). *Communication as culture*. New York, NY: Routledge.
- Carver, C. S., Ganellen, R. J., & Behar-Mitrani, V. (1985). Depression and cognitive style: Comparisons between measures. *Journal of Personality and Social Psychology*, 49(3), 722-728. doi:10.1037/0022-3514.49.3.722.
- Caseras X., Garner M., Bradley B. P., Mogg K. (2007). Biases in visual orienting to negative and positive scenes in dysphoria: an eye movement study. *Journal of Abnormal Psychology*, 116, 491–497. doi: 10.1037/0021-843X.116.3.491.
- Centers for Disease Control and Prevention (2011). What is health communications? Retrieved from <http://www.cdc.gov/healthcommunication/healthbasics/whatishc.html>.
- Centers for Disease Control and Prevention (2012). Suicide Prevention. Retrieved from: [http://www.cdc.gov/violenceprevention/pub/youth\\_suicide.html](http://www.cdc.gov/violenceprevention/pub/youth_suicide.html).
- Centers for Disease Control and Prevention (2014). Leading causes of death and numbers of deaths, by age: United States, 1980 and 2013. Retrieved from <http://www.cdc.gov/nchs/data/hus/2014/021.pdf>.
- Center for Disease Control and Prevention (2015). Suicide: Facts at a glance. Retrieved from <http://www.cdc.gov/violenceprevention/pdf/suicide-datasheet-a.pdf>.
- Chambers, D. A, Pearson, J. L., Lubell, K., Brandon, S., O'Brien, K., & Zinn, J. (2005). The science of public messages for suicide prevention: a workshop summary. *Suicide & Life-Threatening Behavior*, 35(2), 134–145. doi:10.1521/suli.35.2.134.62871.
- Chandra, A., & Minkovitz, C. S. (2006). Stigma starts early: Gender differences in teen willingness to use mental health services. *Journal of Adolescent Health*, 38(6), 754.e1–754.e8. doi:10.1016/j.jadohealth.2005.08.011.

- Cheng, A. T. A., Chen, T. H. H., Chen, C. C., & Jenkins, R. (2000). Psychosocial and psychiatric risk factors for suicide. *The British Journal of Psychiatry*, *177*(4), 360–365. Retrieved from <http://bjp.rcpsych.org/content/177/4/360.abstract>.
- Christensen, H., Leach, L. S., Barney, L., Mackinnon, A. J., & Griffiths, K. M. (2006). The effect of web based depression interventions on self reported help seeking: randomised controlled trial [ISRCTN77824516]. *BMC Psychiatry*, *6*, 13. doi: 10.1186/1471-244X-6-13.
- Clay, R. A. (2013). Mental health issues in college on the rise: APA is working with the White House to address the problem. *American Psychological Association*, *44*(11), 54. Retrieved from <http://www.apa.org/monitor/2013/12/elc-mental-health.aspx>.
- Clement, S., Lassman, F., Barley, E., Evans-Lacko, S., Williams, P., Yamaguchi, S., Slade, M., Rüsch, N., & Thornicroft, G. (2013). Mass media interventions for reducing mental health-related stigma. *Cochrane Database of Systematic Reviews*, *7*. doi: 10.1002/14651858.CD009453.pub2.
- Cooke, R., & Sheeran, P. (2013). Properties of intention: component structure and consequences for behavior, information processing, and resistance. *Journal of Applied Social Psychology*, *43*(4), 749–760. doi:10.1111/jasp.12003.
- Cooley, C. H. (1902). *Human nature and social order*. New York, NY: Scribner.
- Corrigan, P. (2004). How stigma interferes with mental health care. *American Psychologist*, *59*(7), 614–625. doi:10.1037/0003-066X.59.7.614.
- Corrigan, P. W., Druss, B. G., & Perlick, D. A. (2014). The impact of mental illness stigma on seeking and participating in mental health care. *Psychological Science in the Public Interest*, *15*(2), 37–70. doi:10.1177/1529100614531398.
- Corrigan, P. W., & Kleinlein, P. (2005). The impact of mental illness stigma. In P. W. Corrigan & P. Kleinlein (Eds.), *On the stigma of mental illness: Practical strategies for research and social change* (11–44). Washington, D. C.: American Psychological Association.
- Corrigan, P. W., Morris, S. B., Michaels, P. J., Rafacz, J. D., & Rüsch, N. (2012). Challenging the public stigma of mental illness: A meta-analysis of outcome studies. *Psychiatric Services*, *63*(10), 963–973. doi:10.1176/appi.ps.201100529.
- Corrigan, P. W., & Shapiro, J. R. (2010). Measuring the impact of programs that challenge the public stigma of mental illness. *Clinical Psychology Review*, *30*(8), 907–22. doi:10.1016/j.cpr.2010.06.004.
- Corrigan, P. W., & Watson, A. M. Y. C. (2002). Understanding the impact of stigma on people with mental illness. *World Psychiatry*, *1*(1), 16–20. Retrieved from <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1489832/>.
- Costa, P. T., & McCrae, R. R. (1992). *Revised NEO Personality Inventory (NEO-PI-R) and NEO Five-Factor Inventory (NEO-FFI) professional manual*. Odessa, FL: Psychological Assessment Resources.
- Coyne, J. C., & Gotlib, I. H. (1983). The role of cognition in depression: A critical appraisal. *Psychological Bulletin*, *94*(3), 472–505. doi:10.1037/0033-2909.94.3.472.

- Croyle, R. T., & Ditto, P. H. (1990). Illness cognition and behavior: An experimental approach. *Journal of Behavioral Medicine, 13*(1), 31–52. doi:10.1007/BF00844898.
- Czyz, E. K., Horwitz, A. G., Eisenberg, D., Kramer, A., & King, C. A. (2013). Self-reported barriers to professional help seeking among college students at elevated risk for suicide. *Journal of American College Health, 61*(7), 398–406. doi:10.1080/07448481.2013.820731.
- D'Argembeau, A. (2013). On the role of the ventromedial prefrontal cortex in self-processing: The valuation hypothesis. *Frontiers in Human Neuroscience, 7*, 372. doi:10.3389/fnhum.2013.00372.
- Denny, E. B., & Hunt, R. R. (1992). Affective valence and memory in depression: Dissociation of recall and fragment completion. *Journal of Abnormal Psychology, 101*(3), 575–580. doi:10.1037/0021-843X.101.3.575.
- Derry, P. A., & Kuiper, N. A. (1981). Schematic processing and self-reference in clinical depression. *Journal of Abnormal Psychology, 90*(4), 286–297. doi:10.1037/0021-843X.90.4.286.
- Deschênes, S. S., Burns, R. J., & Schmitz, N. (2016). Associations between diabetes, major depressive disorder and generalized anxiety disorder comorbidity, and disability: Findings from the 2012 Canadian Community Health Survey - Mental Health (CCHS-MH). *Journal of Psychosomatic Research, 78*(2), 137–142. doi:10.1016/j.jpsychores.2014.11.023.
- Dillard, J. P. & Pfau, M. (2002). *The Persuasion Handbook*. Thousand Oaks, CA: Sage.
- Disner, S. G., Shumake, J. D., & Beevers, C. G. (2016). Self-referential schemas and attentional bias predict severity and naturalistic course of depression symptoms. *Cognition and Emotion*, ahead of print online publication, 1–13. doi:10.1080/02699931.2016.1146123.
- Dozois, D. J. A., & Dobson, K. S. (2001). A longitudinal investigation of information processing and cognitive organization in clinical depression: Stability of schematic interconnectedness. *Journal of Consulting and Clinical Psychology, 69*(6), 914–925. doi:10.1037/0022-006X.69.6.914.
- Drapeau, C. W., & McIntosh, J. L. (2015). U.S.A. suicide 2013: Official final data. Washington, DC: American Association of Suicidology, dated February 10, 2016, retrieved from <http://www.suicidology.org>.
- Eaton, W. W., Neufeld, K., Chen, L., & Cai, G. (2000). A comparison of self-report and clinical diagnostic interviews for depression: Diagnostic interview schedule and schedules for clinical assessment in neuropsychiatry in the Baltimore epidemiologic catchment area follow-up. *Archives of General Psychiatry, 57*(3), 217–222. Retrieved from <http://dx.doi.org/10.1001/archpsyc.57.3.217>.
- Ebmeier, K. P., Donaghey, C., & Steele, J. D. (2006). Recent developments and current controversies in depression. *The Lancet, 367*(9505), 153–167. doi:[http://dx.doi.org/10.1016/S0140-6736\(06\)67964-6](http://dx.doi.org/10.1016/S0140-6736(06)67964-6).
- Eisenberg, D., Golberstein, E., & Gollust, S. E. (2007). Help-seeking and access to mental health care in a university student population. *Medical Care, 45*(7), 594–601. doi: 10.1097/MLR.0b013e31803bb4c1.

- Eizenman M., Yu L. H., Grupp L., Eizenman E., Ellenbogen M., Gemar M., Levitan R. D. (2003). A naturalistic visual scanning.g approach to assess selective attention in major depressive disorder. *Psychiatry Research*, *118*, 117–128. Doi: [http://dx.doi.org/10.1016/S0165-1781\(03\)00068-4](http://dx.doi.org/10.1016/S0165-1781(03)00068-4).
- Feng, G. C. (2014). Mistakes and how to avoid mistakes in using intercoder reliability indices. *Methodology: European Journal of Research Methods for the Behavioral and Social Sciences*, *11*(1), 13-22. Doi: 10.1027/1614-2241/a000086.
- Fishbein, M. (2000). The role of theory in HIV prevention. *AIDS Care*, *12*(3), 273–278. doi:10.1080/09540120050042918.
- Fishbein, M., & Ajzen, I. (1975). *Belief, attitude, intention, and behavior: An introduction to theory and research*. Reading, MA: Addison-Wesley.
- Fishbein, M. & Ajzen, I. (2010). *Predicting and changing behavior: The reasoned action approach*. New York, NY: Psychology Press.
- Fishbein, M. & Yzer, M. C. (2003). Using theory to design effective health behavior interventions. *Communication Theory*, *13*, 164-183. doi: 10.1111/j.1468-2885.2003.tb00287.x.
- Fiske, S. T. (2010). *Social beings: Core motives in social psychology* (2nd ed.). Hoboken, NJ: Wiley.
- Fiske, S. T. & Taylor, S. E. (1991). *Social Cognition*. New York, NY: McGraw-Hill.
- Fiske, S. T. & Taylor, S. E. (2013). *Social cognition: From brains to culture*. London: Sage.
- Fitzgerald, P. B., Laird, A. R., Maller, J., & Daskalakis, Z. J. (2008). A meta-analytic study of changes in brain activation in depression. *Human Brain Mapping*, *29*(6), 683–695. <http://doi.org/10.1002/hbm.20426>.
- Flint, J., & Kendler, K. S. (2014). The genetics of major depression. *Neuron*, *81*(3), 484–503. doi:10.1016/j.neuron.2014.01.027.
- Frances, A. J. (2012). DSM 5 is guide not bible – ignore its ten worst changes. *Psychology Today*. Retrieved from <https://www.psychologytoday.com/blog/dsm5-in-distress/201212/dsm-5-is-guide-not-bible-ignore-its-ten-worst-changes>.
- Freedland, K. E., & Carney, R. M. (2013). Depression as a risk factor for adverse outcomes in coronary heart disease. *BMC Medicine*, *11*(1), 1–9. doi:10.1186/1741-7015-11-131.
- Freelon, D. (2013). ReCal OIR: Ordinal, interval, and ratio intercoder reliability as a web service. *International Journal of Internet Science*, *8*(1), 10-16.
- Gasse, C., Laursen, T. M., & Baune, B. T. (2014). Major depression and first-time hospitalization with ischemic heart disease, cardiac procedures and mortality in the general population: A retrospective Danish population-based cohort study. *European Journal of Preventive Cardiology*, *21*(5), 532–540. doi:10.1177/2047487312467874.
- Glanz, K., & Bishop, D. B. (2010). The role of behavioral science theory in development and implementation of public health interventions. *Annual Review of Public Health*, *31*, 399–418. doi:10.1146/annurev.publhealth.012809.103604.
- Goldberg, L. R. (1993). The structure of phenotypic personality traits. *American Psychologist*, *48*(1), 26-34. doi:10.1037/0003-066X.48.1.26.

- Gollan, T. H., Montoya, R. I., Cera, C., & Sandoval, T. C. (2008). More use almost always a means a smaller frequency effect: Aging, bilingualism, and the weaker links hypothesis. *Journal of Memory and Language*, *58*(3), 787–814. doi:10.1016/j.jml.2007.07.001.
- Gotlib, I. H., & Joormann, J. (2010). Cognition and depression: current status and future directions. *Annual Review of Clinical Psychology*, *6*(1), 285–312. doi:10.1146/annurev.clinpsy.121208.131305.
- Gotlib, I. H., Kasch, K. L., Traill, S. K., Joormann, J., Arnow, B. A., & Johnson, S. L. (2004). Coherence and specificity of information processing biases in depression and social phobia. *Journal of Abnormal Psychology*, *113*, 386–398. <http://dx.doi.org/10.1037/0021-843X.113.3.386>.
- Gotlib, I. H., Krasnoperova, E., Yue, D. N., & Joormann, J. (2004). Attentional biases for negative interpersonal stimuli in clinical depression. *Journal of Abnormal Psychology*, *113*, 127–135. Doi: 10.1037/0021-843X.113.1.127
- Groenewold, N. A., Opmeer, E. M., de Jonge, P., Aleman, A., & Costafreda, S. G. (2013). Emotional valence modulates brain functional abnormalities in depression: evidence from a meta-analysis of fMRI studies. *Neuroscience and Biobehavioral Reviews*, *37*(2), 152–63. doi:10.1016/j.neubiorev.2012.11.015.
- Gulliver, A., Griffiths, K. M., & Christensen, H. (2010). Perceived barriers and facilitators to mental health help-seeking in young people: a systematic review. *BMC Psychiatry*, *10*(1), 113. doi:10.1186/1471-244X-10-113.
- Haaga, D. A., Dyck, M. J., & Ernst, D. (1991). Empirical status of cognitive theory of depression. *Psychological Bulletin*, *110*(2), 215–236. doi:10.1037/0033-2909.110.2.215.
- Hackett, M., & Pickles, K. (2014). Part I: frequency of depression after stroke: An updated systematic review and meta-analysis of observational studies. *International Journal of Stroke*, *9*(8), 1017 – 1025. Doi: 10.1111/ijvs.12357.
- Haley, G. M. T., Fine, S., Marriage, K., Moretti, M. M., & Freeman, R. J. (1985). Cognitive bias and depression in psychiatrically disturbed children and adolescents. *Journal of Consulting and Clinical Psychology*, *53*(4), 535–537. doi:10.1037/0022-006X.53.4.535.
- Hannah, G., & Cafferty, T. P. (2006). Attribute and Responsibility Framing Effects in Television News Coverage of Poverty<sup>1</sup>. *Journal of Applied Social Psychology*, *36*(12), 2993–3014. doi:10.1111/j.0021-9029.2006.00139.x.
- Heider, F. (1958). *The psychology of interpersonal relations*. New York, NY: Wiley.
- Horwitz, A. V. & Wakefield, J. C. (2007). *The loss of sadness: How psychiatry transformed normal sorrow into depressive disorder*. New York, NY: Oxford University Press.
- Hunt, J., & Eisenberg, D. (2010). Mental Health Problems and Help-Seeking Behavior Among College Students. *Journal of Adolescent Health*, *46*(1), 3–10. doi:http://dx.doi.org/10.1016/j.jadohealth.2009.08.008.
- Iyengar, S. (1990). Framing responsibility for political issues: The case of poverty. *Political Behavior*, *12*(1), 19–40. doi:10.1007/BF00992330.
- James, W. (1907). The energies of men. *Science*, *25*(635), 321–332.

- Kahneman, D., & Tversky, A. (1979). Prospect theory: An analysis of decision under risk. *Econometrica: Journal of the Econometric Society*, 47(March), 263–291. doi:10.1111/j.1536-7150.2011.00774.x.
- Kanter, J. W., Busch, A. M., Weeks, C. E., & Landes, S. J. (2008). The Nature of Clinical Depression: Symptoms, Syndromes, and Behavior Analysis. *The Behavior Analyst*, 31(1), 1–21. PMC2395346.
- Katon, J. W. (2011). Epidemiology and treatment of depression in patients with chronic medical illness. *Dialogues in Clinical Neuroscience*, 13(1), 7–23. PMC3181964.
- Keeler, A., Siegel, J. T., & Alvaro, E. A. (2014). Depression and help seeking among Mexican-Americans: The mediating role of familism. *Journal of Immigrant and Minority Health*, 16(6), 1225–1231. doi: 10.1007/s10903-013-9824-6.
- Kendall, P. C., & Watson, D. (Eds.). (1989). *Anxiety and depression: Distinctive and overlapping features*. San Diego, CA, US: Academic Press.
- Kendler, K. S., Gatz, M., Gardner, C. O., & Pedersen, N. L. (2006). A Swedish national twin study of lifetime major depression. *American Journal of Psychiatry*, 163(1), 109–114. doi:10.1176/appi.ajp.163.1.109.
- Kendler, K. S., Karkowski, L. M., & Prescott, C. A. (1999). Causal relationship between stressful life events and the onset of major depression. *Psychiatry Interpersonal and Biological Processes*, 156(June), 837–841. doi:10.1176/ajp.156.6.837.
- Kessler, R. C. (1997). The effects of stressful life events on depression. *Annual Review of Psychology*, 48(1), 191–214. doi:10.1146/annurev.psych.48.1.191.
- Kessler, R. C. (2003). Epidemiology of women and depression. *Journal of Affective Disorders*, 74(1), 5–13. doi:10.1016/S0165-0327(02)00426-3.
- Kessler, R. C., Amminger, G. P., Aguilar-Gaxiola, S., Alonso, J., Lee, S., & Ustün, T. B. (2007). Age of onset of mental disorders: a review of recent literature. *Current Opinion in Psychiatry*, 20(4), 359–64. doi:10.1097/YCO.0b013e32816ebc8c.
- Kessler, R. C., Berglund, P., Demler, O., Jin, R., Koretz, D., Merikangas, K. R., Rush, A. J., Walters, E. E., Wang, P. S. (2003). The epidemiology of major depressive disorder: Results from the national comorbidity survey replication (ncs-r). *JAMA*, 289(23), 3095–3105. Retrieved from <http://dx.doi.org/10.1001/jama.289.23.3095>.
- Kessler, R. C., Berglund, P., Demler, O., Jin, R., & Walters, E. E. (2005). Lifetime prevalence and age-of-onset distributions of DSM-IV disorders in the National comorbidity survey replication. *Archives of General Psychiatry*, 62(6), 593e602.
- Kessler, R. C., Chiu, W. T., Demler, O., & Walters, E. E. (2005). Prevalence, severity, and comorbidity of 12-month DSM-IV disorders in the National comorbidity survey replication. *Archives of General Psychiatry*, 62(6), 617e627. PMC2847357.
- Kim, S. H., & Willis, L. A. (2007). Talking about obesity: news framing of who is responsible for causing and fixing the problem. *Journal of Health Communication*, 12(4), 359–376. doi:10.1177/107769901008700308.
- Kizilbash, A. H., Vanderploeg, R. D., & Curtiss, G. (2002). The effects of depression and anxiety on memory performance. *Archives of Clinical Neuropsychology*, 17(1), 57–67. doi:[http://dx.doi.org/10.1016/S0887-6177\(00\)00101-3](http://dx.doi.org/10.1016/S0887-6177(00)00101-3).

- Klimes-Dougan, B., & Lee, C. Y. S. (2010). Suicide prevention public service announcements: perceptions of young adults. *Crisis, 31*(5), 247–54. doi:10.1027/0227-5910/a000032.
- Krantz, S. E., & Gallagher-Thompson, D. (1990). Depression and information valence influence depressive cognition. *Cognitive Therapy and Research, 14*(1), 95–108. doi:10.1007/BF01173527.
- Krantz, S., & Hammen, C. L. (1979). Assessment of cognitive bias in depression. *Journal of Abnormal Psychology, 88*(6), 611-619. doi:10.1037/0021-843X.88.6.611.
- Kreuter, M. W., Farrell, D., Olevitch, L., & Brennan, L. (2000). *Tailoring health messages: Customizing communication with computer technology*. Mahwah, N.J.: Lawrence Erlbaum Associates.
- Kreuter, M. W., & Wray, R. J. (2003). Tailored and targeted health communication: Strategies for enhancing information relevance. *American Journal of Health Behavior, 27*(Suppl. 3), S227-232. PMID:14672383.
- Krippendorff, K. (2013). *Content Analysis: An Introduction to Its Methodology*. Sage, Thousand Oaks, CA, 3rd edition.
- Kroeze, W., Werkman, A., & Brug, J. (2006). A systematic review of randomized trials on the effectiveness of computer-tailored education on physical activity and dietary behaviors. *Annals of Behavioral Medicine, 31*(3), 205–223. doi:10.1207/s15324796abm3103\_2.
- Kuiper, N. A., & Derry, P. A. (1982). Depressed and nondepressed content self-reference in mild depressives. *Journal of Personality, 50*(1), 67–80. doi:10.1111/j.1467-6494.1982.tb00746.x.
- Lacy, S., Watson, B. R., Riffe, D., & Lovejoy, J. (2015). Issues and best practices in content analysis. *Journalism & Mass Communication Quarterly, 93*, 16-37. doi:10.1177/1077699015607338.
- Lahey, B. B. (2009). Public health significance of neuroticism. *American Psychologist, 64*(4), 241–256. doi:10.1037/a0015309.Public
- Lawson, C., MacLeod, C., & Hammond, G. (2002). Interpretation revealed in the blink of an eye: Depressive bias in the resolution of ambiguity. *Journal of Abnormal Psychology, 111*(2), 321-328. doi:10.1037/0021-843X.111.2.321.
- Lesch, K. P. (2004). Gene-environment interaction and the genetics of depression. *Journal of Psychiatry and Neuroscience, 29*(3), 174–184.
- Leykin, Y., Roberts, C. S., & DeRubeis, R. J. (2011). Decision-making and depressive symptomatology. *Cognitive Therapy and Research, 35*(4), 333–341. doi: <http://doi.org/10.1007/s10608-010-9308-0>
- Lienemann, B. A., & Siegel, J. T. (2015). State psychological reactance to depression public service announcements among people with varying levels of depressive symptomatology. *Health Communication, 31*(1), 102-116. doi: 10.1080/10410236.2014.940668.
- Lienemann, B. A., Siegel, J. T., & Crano, W. D. (2013). Persuading people with depression to seek help: respect the boomerang. *Health Communication, 28*(7), 718–28. doi: 10.1080/10410236.2012.712091.

- Marvel, C. L., & Paradiso, S. (2004). Cognitive and neurological impairment in mood disorders. *The Psychiatric Clinics of North America*, 27(1), 19–viii. doi: [http://doi.org/10.1016/S0193-953X\(03\)00106-0](http://doi.org/10.1016/S0193-953X(03)00106-0).
- Matt, G. E., Vázquez, C., & Campbell, W. K. (1992). Mood-congruent recall of affectively toned stimuli: A meta-analytic review. *Clinical Psychology Review*, 12(2), 227–255. doi: [http://dx.doi.org/10.1016/0272-7358\(92\)90116-P](http://dx.doi.org/10.1016/0272-7358(92)90116-P).
- Matthews G. R., Antes J. R. (1992). Visual attention and depression: cognitive biases in the eye fixations of the dysphoric and the nondepressed. *Cognitive Therapy and Research*, 16, 359–371. doi: 10.1007/BF01183287.
- McIntosh, J.L. & Drapeau, C.W. (2012). *U.S.A. suicide: 2010 official final data*. Washington, D.C: American Association of Suicidology.
- Mead, G. H. (1934). *Mind, self & society*. Chicago, IL: University of Chicago Press.
- Mendelsohn, C. (2012). Smoking and depression--a review. *Australian Family Physician*, 41(5), 304–7. Retrieved from <http://www.ncbi.nlm.nih.gov/pubmed/22558621>.
- Meyerowitz, B. E., Wilson, D. K., & Chaiken, S. (1991, June). Loss-framed messages increase breast self-examination for women who perceive risk. Paper presented at the annual convention of the American Psychological Society, Washington, D. C.
- Mezulis, A. H., Abramson, L. Y., Hyde, J. S., & Hankin, B. L. (2004). Is there a universal positivity bias in attributions? A meta-analytic review of individual, developmental, and cultural differences in the self-serving attributional bias. *Psychological Bulletin*, 130(5), 711-747. doi:10.1037/0033-2909.130.5.711.
- Miller, I. W., Norman, W. H., & Dow, M. G. (1986). Psychosocial characteristics of “double depression.” *The American Journal of Psychiatry*, 143(8), 1042-1044. <http://dx.doi.org/10.1176/ajp.143.8.1042>.
- Mistler, B. J., Reetz, D. R., Krylowics, B., & Barr, V. (2013). *The Association for University and College Counseling Center Directors Annual Survey*. Retrieved from: [http://aucccd.org/support/aucccd\\_directors\\_survey\\_monograph\\_2012\\_public.pdf](http://aucccd.org/support/aucccd_directors_survey_monograph_2012_public.pdf).
- National Alliance on Mental Illness (2012). *College students speak: A survey report on mental health*. Retrieved from: [http://www2.nami.org/Content/NavigationMenu/Find\\_Support/NAMI\\_on\\_Campus1/NAMI\\_Survey\\_on\\_College\\_Students/collegereport.pdf](http://www2.nami.org/Content/NavigationMenu/Find_Support/NAMI_on_Campus1/NAMI_Survey_on_College_Students/collegereport.pdf).
- National Institutes of Health, National Institute of Mental Health. (2005). Mental Illness Exacts Heavy Toll, Beginning in Youth. Retrieved from <http://www.nih.gov/news/pr/jun2005/nimh-06.htm>.
- National Institute of Mental Health (n.d.). *What is Depression?* Retrieved from: <http://www.nimh.nih.gov/health/topics/depression/index.shtml>.
- National Institute of Mental Health (n.d.). Depression and college students. Retrieved from <http://www.nimh.nih.gov/health/publications/depression-and-college-students-new/index.shtml>.
- Noar, S. M., Benac, C. N., & Harris, M. S. (2007). Does tailoring matter? Meta-analytic review of tailored print health behavior change interventions. *Psychological Bulletin*, 133(4), 673-693. doi:10.1037/0033-2909.133.4.673.
- O’Keefe, D. J., & Jensen, J. D. (2007). The relative persuasiveness of gain-framed loss-framed messages for encouraging disease prevention behaviors: A meta-analytic

- review. *Journal of Health Communication*, 12(7), 623–644.  
doi:10.1080/10810730701615198.
- O’Keefe, D. J., & Jensen, J. D. (2009). The relative persuasiveness of gain-framed and loss-framed messages for encouraging disease detection behaviors: A meta-analytic review. *Journal of Communication*, 59(2), 296–316. doi:10.1111/j.1460-2466.2009.01417.x
- O’Keefe, D. J., & Nan, X. (2012). The relative persuasiveness of gain- and loss-framed messages for promoting vaccination: A meta-analytic review. *Health Communication*, 27(8), 776–783. doi:10.1080/10410236.2011.640974.
- Opel, N., Redlich, R., Grotegerd, D., Dohm, K., Heindel, W., Kugel, H., Arolt, V., Dannlowski, U. (2015). Obesity and major depression: Body-mass index (BMI) is associated with a severe course of disease and specific neurostructural alterations. *Psychoneuroendocrinology*, 51, 219–226.  
doi:http://dx.doi.org/10.1016/j.psyneuen.2014.10.001.
- Orth, U., & Robins, R. W. (2013). Understanding the link between low self-esteem and depression. *Current Directions in Psychological Science*, 22(6), 455–460.  
doi:10.1177/0963721413492763
- Orth, U., Robins, R. W., Widaman, K. F., & Conger, R. D. (2014). Is low self-esteem a risk factor for depression? Findings from a longitudinal study of Mexican-origin youth. *Developmental Psychology*, 50(2), 622–33. doi:10.1037/a0033817.
- Pan, A., Okereke, O. I., Sun, Q., Logroscino, G., Manson, J. E., Willett, W. C., Rexrode, K. M. (2011). Depression and Incident Stroke in Women. *Stroke; a Journal of Cerebral Circulation*, 42(10), 2770–2775.  
http://doi.org/10.1161/STROKEAHA.111.617043.
- Patel, V., Flisher, A. J., Hetrick, S., & McGorry, P. (2007). Mental health of young people: a global public-health challenge. *The Lancet*, 369(9569), 1302–1313.  
doi:http://dx.doi.org/10.1016/S0140-6736(07)60368-7.
- Pennebaker, J. W. (2011). *The secret life of pronouns: What our words say about us*. New York, NY: Bloomsbury Press.
- Pennebaker, J. W., Booth, R. J., Boyd, R. L., & Francis, M. E. (2015). *Linguistic Inquiry and Word Count: LIWC2015*. Austin, TX: Pennebaker Conglomerates (www.LIWC.net).
- Pennebaker, J. W., & Francis, M. (1996). Cognitive, emotional, and language processes in disclosure. *Cognition and Emotion*, 10, 601–626. doi: 10.1080/026999396380079.
- Peterson, C., Seligman, M. E., & Vaillant, G. E. (1988). Pessimistic explanatory style is a risk factor for physical illness: A thirty-five-year longitudinal study. *Journal of Personality and Social Psychology*, 55(1), 23–27. doi:10.1037/0022-3514.55.1.23.
- Petty, R. E., & Cacioppo, J. T. (1984). Source factors and the elaboration likelihood model of persuasion. In T. C. Kinnear (Ed.), *Advances in Consumer Research* (Vol. 11) (668-672). Provo, UT : Association for Consumer Research.
- Petty, R. E., & Cacioppo, J. T. (1986). *Communication and Persuasion: Central and Peripheral Routes to Attitude Change*. New York, NY: Springer New York.

- Petty, R. E., & Cacioppo, J. T. (1990). Involvement and persuasion: Tradition versus integration. *Psychological Bulletin*, *107*(3), 367–374. doi:10.1037/0033-2909.107.3.367.
- Petty, R. E., Haugtvedt, C. P., & Smith, S. M. (1995). Message elaboration as a determinant of attitude strength. In R.E. Petty & J. A. Krosnick (Eds.), *Attitude Strength: Antecedents and Consequences* (93-109). Hillsdale, NJ: Erlbaum.
- Petty, R. E., Schumann, D. W., Richman, S. A., & Strathman, A. J. (1993). Positive mood and persuasion: Different roles for affect under high- and low-elaboration conditions. *Journal of Personality and Social Psychology*, *64*(1), 5–20. doi:10.1037/0022-3514.64.1.5.
- Petty, R. E., Wegener, D. T., & Fabrigar, L. R. (1997). Attitude and attitude change. *Annual Review of Psychology*, *48*(1), 609–647. doi:10.1146/annurev.psych.48.1.609.
- Pickersgill, M. D. (2014). Debating DSM-5: diagnosis and the sociology of critique. *Journal of Medical Ethics*, *40*(8), 521–525. doi:10.1136/medethics-2013-101762
- Pinto-Foltz, M. D., Logsdon, M. C., & Myers, J. A. (2011). Feasibility, acceptability, and initial efficacy of a knowledge-contact program to reduce mental illness stigma and improve mental health literacy in adolescents. *Social Science & Medicine*, *72*(12), 2011–9. doi:10.1016/j.socscimed.2011.04.006.
- Puhl, R. M., & Heuer, C. A. (2010). Obesity stigma: important considerations for public health. *American Journal of Public Health*, *100*(6), 1019–1028. <http://doi.org/10.2105/AJPH.2009.159491>.
- Pyne, J. M., Kuc, E. J., Schroeder, P. J., Fortney, J. C., Edlund, M., & Sullivan, G. (2004). Relationship between perceived stigma and depression severity. *The Journal of Nervous and Mental Disease*, *192*(4), 278-283.
- Pyszczynski, T., & Greenberg, J. (1987). Self-regulatory perseveration and the depressive self-focusing style: A self-awareness theory of reactive depression. *Psychological Bulletin*, *102*(1), 122-138. doi:10.1037/0033-2909.102.1.122.
- Revere, D., & Dunbar, P. J. (2001). Review of computer-generated outpatient health behavior interventions: clinical encounters “in absentia.” *Journal of the American Medical Informatics Association*, *8*(1), 62–79. Retrieved from <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC134592/>.
- Rickwood, D. J., Deane, F. P., & Wilson, C. J. (2007). When and how do young people seek professional help for mental health problems? *The Medical Journal of Australia*, *187*(7 Suppl), 35–39. doi:ric10279\_fm [pii].
- Riffe, D., Lacy, S., & Fico, F. (2014). *Analyzing media messages: Using quantitative content analysis in research* (3rd ed.). New York, NY: Routledge.
- Rimal, R. N., & Adkins, A. D. (2003). Using computers to narrowcast health messages: The role of audience segmentation, targeting, and tailoring in health promotion. In T. L. Thompson, A. M. Dorsey, K. I. Miller, & R. Parrott (Eds.), *Handbook of health communication* (497–513). Mahwah, NJ: Lawrence Erlbaum Associates Publishers.
- Rimal & Lapinski (2009). Why health communication is important in public health. *Bulletin of the World Health Organization*, *87*(4), 245-324. doi:10.2471/BLT.08.056713.

- Rimer, B. K., & Glassman, B. (1999). Is there a use for tailored print communications in cancer risk communication? *JNCI Monographs*, 25, 140–148. Retrieved from <http://jncimono.oxfordjournals.org/content/1999/25/140.abstract>.
- Rimer, B. K., & Kreuter, M. W. (2006). Advancing tailored health communication: A persuasion and message effects perspective. *Journal of Communication*, 56, S184–S201. doi:10.1111/j.1460-2466.2006.00289.x.
- Rizley, R. (1978). Depression and distortion in the attribution of causality. *Journal of Abnormal Psychology*, 87(1), 32-48. doi:10.1037/0021-843X.87.1.32.
- Rothman, A. J., Bartels, R. D., Wlaschin, J., & Salovey, P. (2006). The strategic use of gain- and loss-framed messages to promote healthy behavior: How theory can inform practice. *Journal of Communication*, 56, S202–S220. doi:10.1111/j.1460-2466.2006.00290.x.
- Rothman, A. J., Kelly, K. M., Hertel, A. W., & Salovey, P. (2003). Message frames and illness representations: Implications for interventions to promote and sustain healthy behavior. In L. D. C. H. Leventhal (Ed.), *The self-regulation of health and illness behaviour* (278–296). New York, NY: Routledge.
- Rothman, A. J., Martino, S. C., Bedell, B. T., Detweiler, J. B., & Salovey, P. (1999). The systematic influence of gain-and loss-framed messages on interest in and use of different types of health behavior. *Personality and Social Psychology Bulletin*, 25(11), 1355–1369. doi:10.1177/0146167299259003.
- Rothman AJ, Pronin E, Salovey P. (1996). The influence of prior concern on the persuasiveness of loss-framed messages about skin cancer. Presented at the annual meeting of the Society of Experimental Social Psychology; October; Sturbridge, MA. 1996.
- Rothman, A. J., & Salovey, P. (1997). Shaping perceptions to motivate healthy behavior: The role of message framing. *Psychological Bulletin*, 121(1), 3-19. doi:10.1037/0033-2909.121.1.3.
- Rothman, A.J., Stark, E., & Salovey, P. (2006). Using message framing to promote healthy behavior: A guide to best practices. In J. Trafton (Ed.), *Best Practices in the Behavioral Management of Chronic Diseases* (Vol. 3) (31-48). Los Altos, CA: Institute for Disease Management.
- Seidel, E. M., Satterthwaite, T. D., Eickhoff, S. B., Schneider, F., Gur, R. C., Wolf, D. H., Habel, U., & Derntl, B. (2016). Neural correlates of depressive realism: An fMRI study on causal attribution in depression. *Journal of Affective Disorders*, 138(3), 268–276. doi:10.1016/j.jad.2012.01.041.
- Seligman, M. (1972). Learned helplessness. *Annual Review of Medicine*, 23, 407–412. Retrieved from <http://onlinelibrary.wiley.com/doi/10.1002/9780470479216.corpsy0500/full\nhttp://www.annualreviews.org/doi/pdf/10.1146/annurev.me.23.020172.002203>.
- Seligman, M., & Campbell, B. A. (1965). Effect of intensity and duration of punishment on extinction of an avoidance response. *Journal of Comparative and Physiological Psychology*, 59(2), 295–297. doi:10.1037/h0021845.
- Seligman, M., & Csikszentmihalyi, M. (2000). Positive psychology: An introduction. *American Psychologist*, 55(1), 5-14. doi:10.1037/0003-066X.55.1.5.

- Shen, L., & Bigsby, E. (2013). The effects of message features: Content, structure, and style. In J. P. Dillard & L. Shen (Eds.), *The Sage handbook of persuasion: Developments in theory and practice* (2nd ed.) (20-35). Thousand Oaks, CA: Sage.
- Skinner, C. S., Campbell, M. K., Rimer, B. K., Curry, S., & Prochaska, J. O. (1999). How effective is tailored print communication? *Annals of Behavioral Medicine*, 21(4), 290–298. doi:10.1007/BF02895960.
- Sowislo, J. F., & Orth, U. (2013). Does low self-esteem predict depression and anxiety? A meta-analysis of longitudinal studies. *Psychological Bulletin*, 139(1), 213-240. doi:10.1037/a0028931.
- Sowislo, J., Orth, U., & Meier, L. (2014). What constitutes vulnerable self-esteem? Comparing the prospective effects of low, unstable, and contingent self-esteem on depressive symptoms. *The Journal of Abnormal Psychology*, 123(4), 737–753. doi:10.1037/a0037770.
- St. Lawrence, J. S., & Fortenberry, J. D. (2007). Behavioral interventions for STDs: Theoretical models and interventions methods. In S. O. Aral & J. M. Douglas (Eds.), *Behavioral interventions for prevention and control of sexually transmitted diseases* (23–59). Boston, MA: Springer.
- Sullivan, P. F., Neale, M. C., & Kendler, K. S. (2000). Genetic epidemiology of major depression: Review and meta-analysis. *American Journal of Psychiatry*, 157(10), 1552–1562. doi:10.1176/appi.ajp.157.10.1552.
- Suls, J., & Bunde, J. (2005). Anger, anxiety, and depression as risk factors for cardiovascular disease: The problems and implications of overlapping affective dispositions. *Psychological Bulletin*, 131(2), 260-300. doi:10.1037/0033-2909.131.2.260.
- Tartakovsky, M. (2008). Depression and anxiety among college students. *Psych Central*. Retrieved from: <http://psychcentral.com/lib/depression-and-anxiety-among-college-students/0001425>.
- Thase, M. E. (2016). Managing medical comorbidities in patients with depression in order to improve prognosis. *Journal of Clinical Psychiatry*, 77(sup.1), 22-27. doi: 10.4088/JCP.14077su1c.04.
- Tobii Technology (2010). Tobii eyetracking: An introduction to eyetracking and Tobii eye trackers. Retrieved from <http://acuity-ets.com/downloads/Tobii%20Eye%20Tracking%20Introduction%20Whitepaper.pdf>.
- Vogel, D. L., Wade, N. G., & Haake, S. (2006). Measuring the self-stigma associated with seeking psychological help. *Journal of Counseling Psychology*, 53(3), 325–337. doi:10.1037/0022-0167.53.3.325.
- Weiner, B. (1980). *Human Motivation*. NY: Holt, Rinehart & Winston.
- Widiger, T. A., & Samuel, D. B. (2005). Diagnostic categories or dimensions? A question for the Diagnostic and Statistical Manual of Mental Disorders--fifth edition. *Journal of Abnormal Psychology*, 114(4), 494-504. doi: <http://dx.doi.org.ezp2.lib.umn.edu/10.1037/0021-843X.114.4.494>.
- Williams, J. M., Watts, F. N., MacLeod, C., & Mathews, A. (1997). *Cognitive psychology and emotional disorder*. Chichester, England: Wiley.

- Wisco, B. E. (2009). Depressive cognition: Self-reference and depth of processing. *Clinical Psychology Review, 29*(4), 382–392. doi:10.1016/j.cpr.2009.03.003.
- Womble L. (2003). Impact of stress factors on college students' academic performance. *Undergraduate Journal of Psychology, 16*, 21–34.
- World Health Organization (2016). Preventing Suicide: A Global Imperative. Retrieved from [http://apps.who.int/iris/bitstream/10665/131056/8/9789241564878\\_eng.pdf?ua=1&ua=1](http://apps.who.int/iris/bitstream/10665/131056/8/9789241564878_eng.pdf?ua=1&ua=1).
- Yzer, M. (2013). Reasoned action theory: Persuasion as belief-based behavior change. In J. P. Dillard & L. Shen (Eds.), *The Sage handbook of persuasion: Developments in theory and practice* (2nd ed.) (120-136). Thousand Oaks, CA: Sage Publications.
- Yzer, M., Weisman, S., Mejia, N., Hennrikus, D., Choi, K., & DeSimone, S. (2015). Informing tobacco cessation benefit use interventions for unionized blue-collar workers: A mixed-methods reasoned action approach. *Prevention Science, 16*, 1–11. doi:10.1007/s11121-015-0566-7.
- Zucker, G. S., & Weiner, B. (1993). Conservatism and perceptions of poverty: An attributional analysis. *Journal of Applied Social Psychology, 23*(12), 925–943. doi:10.1111/j.1559-1816.1993.tb01014.x.
- Zuroff, D. C., Colussy, S. A., & Wielgus, M. S. (1986). Additional comments on depression, selective memory, and response bias. *Cognitive Therapy and Research, 10*(2), 271–273. doi:10.1007/BF01173732