Understanding and Addressing Unmet Need for Mental Health Services in College Populations

by

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TABLE OF CONTENTS

Acknowledgements ii
List of Figures iv
List of Tables v
Abstract vi
Chapter 1: Introduction 1
Background 1
Problem Statement and Significance 2
Dissertation Outline 4
Dissertation Parameters and Key Terms 5
Chapter 2: Help-seeking Conceptualizations and Interventions 7
Chapter Overview 7
Help-seeking: Process, Theories, and Models 8
Campus-based Help-seeking Interventions 17
Critique of Campus-based Help-seeking Intervention Research 29
Summary of Campus-based Help-seeking Interventions 35
Chapter 3: Understanding the Campus Mental Health Treatment Gap 39
Chapter Overview 39
Data 40
Measures 41
Statistical Analysis 46
Limitations 48
Participants 50
Quantifying the Campus Mental Health Treatment Gap 51
Attitudes and Knowledge Related to Help-seeking 55
Reasons for Help-seeking and Non-help-seeking 60
Summary of the Campus Mental Health Treatment Gap 61
Chapter 4: A Novel Intervention Promoting Eating Disorder Treatment Linkage among College Students 78
Chapter Overview 78
Background 79
Conceptual Framework 81
Intervention Study Design 97
Data and Measures 109
Statistical Analysis 110
Participants 115
Intervention Results 121
Limitations 129
Discussion 131
Chapter 5: Conclusion 149
Understanding and Addressing the Campus Mental Health Treatment Gap 149
Summary by Chapter 150
Future Directions for Research and Practice 152
Concluding Comments 158
Appendix 160
References 217

LIST OF FIGURES

Figure 1. Traditionally-emphasized Barriers in the Help-seeking Process 36

Figure 2a. Past-year Treatment by PHQ-9 Depression Score 67

Figure 2b. Past-year Treatment by GAD-7 Anxiety Score 67

Figure 2c. Past-year Treatment by SCOFF Eating Disorder Score 67

Figure 3a. Reported Reasons for Help-seeking among Undergraduates with Past-year Treatment 76

Figure 3b. Reported Barriers among Undergraduates with Untreated Symptoms 76

Figure 4. Conceptual Framework 143

Figure 5a. Participant Flow, Study #1 145

Figure 5b. Participant Flow, Study #2 145

LIST OF TABLES

Table 1. Summary of Campus-based Help-seeking Intervention Studies 37

Table 2. Sample Characteristics (N=21,530) 65

Table 3. Past-year and Current Therapy and Medication by Mental Health Measure 66

Table 4. Variations by Individual Characteristics in Past-year and Current Therapy and Medication among Undergraduates with "Any Mental Health Problem" 68

Table 5. Multivariate Correlates of Past-year Treatment among Undergraduates with "Any Mental Health Problem" 69

Table 6. Mean Attitudes and Knowledge by Mental Health Measure and by Past-year Treatment Status 70

Table 7. Attitudes and Knowledge among Undergraduates with Untreated Symptoms 71

Table 8. Mean Attitudes and Knowledge by Individual Characteristics and Past-year Treatment Status among Undergraduates with "Any Mental Health Problem" 72

Table 9. Multivariate Correlates of Attitudes and Knowledge among Undergraduates with "Any Mental Health Problem" 74

Table 10. Multivariate Correlates of Past-year and Current Therapy and Medication with Attitudes and Knowledge among Undergraduates with "Any Mental Health Problem" 75

Table 11. Mean Attitudes and Knowledge among Undergraduates with Untreated Symptoms by Commonly Reported Barriers 77

Table 12. 2 x 2 x 2 Factorial Design, Study #1 144

Table 13. Baseline Intervention Sample Characteristics (%) 146

Table 14. Unadjusted Percentages at Baseline and 12-week Follow-up 147

Table 15. Regression-adjusted Intervention Effects at 12-week Follow-up—Logistic Regressions 148

Table A1. Summary of Help-seeking Outcomes Table, Chapter 3 160

Table A2. Study #1 Baseline Survey Endings and Intervention Messages, Chapter 4 163

Table A3. Definitions and Operationalizations of Outcomes, Chapter 4 214

Table A4. Baseline Percentages by Sample Attrition, Chapter 4 215

Table A5. Baseline Intervention Sample Demographics across Conditions (%), Chapter 4 216

ABSTRACT

In my dissertation, the main problem of interest is that the majority of college students with mental health problems (roughly 60%) do not receive treatment. This problem is quantified as the “treatment gap”. Population-level interventions to promote help-seeking commonly focus on reducing stigma, improving knowledge, and increasing access. Overall, these interventions have had limited success in changing students’ help-seeking behaviors. I argue that new approaches are needed to narrow the campus mental health treatment gap.

Through detailed descriptive analyses of two large-scale, primary data sets, I find that stigma, misinformation, and lack of access do not appear to be the most salient barriers to treatment for students in need. Instead, students most commonly report not seeking help for reasons that imply lack of urgency and lack of perceived need: “I haven’t had a need”, “I question how serious my needs are”, and “I don’t have time”. These reasons are not directly accounted for in current campus help-seeking interventions.

In response to this, I introduce and evaluate a new approach based on concepts from behavioral economics and social psychology. This approach acknowledges cognitive biases that may impede mental health service utilization, namely social comparison bias, problematic time preferences, and procrastination. These interrelated biases offer a lens through which to understand the pervasive lack of urgency surrounding help-seeking for mental health. To address these biases, I designed an

online intervention for undergraduates with untreated symptoms of eating disorders, as identified in a baseline screen. Through weekly messages, the intervention tried to reframe the help-seeking decision and facilitate the link to treatment. Findings suggest that the intervention had modest but significant effects on help-seeking behavior and attitudes. Most notably, 8% of students received treatment, representing a more than three-fold increase in help-seeking behavior over the 12-week study period. Though there were statistically significant effects on treatment utilization, over 90% of students were still untreated after the intervention. Based on findings from the survey data and feedback collected through post-intervention interviews, I describe specific next steps for optimizing the intervention and overarching priorities for addressing the campus mental health treatment gap moving forward.

CHAPTER 1: INTRODUCTION

Background

Mental illnesses have been referred to as “chronic diseases of the young” (Insel & Fenton, 2005). Unlike with most physical health conditions, the disabling consequences of mental illnesses begin early in life. Roughly half of all lifetime mental disorders have first onset by mid-adolescence and nearly three quarters by the mid-twenties (Kessler et al., 2007). Among adolescents and young adults in the U.S., mental illness accounts for a larger burden of disease than any other class of health conditions (Michaud et al., 2006). Though mental health treatment is increasingly effective and accessible (Dopp, Lipson, & Eisenberg, 2013), utilization rates remain low: less than 50% of adolescents and young adults with a serious mental illness receive any form of treatment (SAMHSA, 2008).[1] Left untreated, symptoms usually become more frequent, severe, and treatment-resistant (Wang et al., 2005). The Institute of Medicine (2009) estimates the annual financial toll of mental health problems among young people to be roughly $250 billion (not including lost productivity) with only $45 billion directed to mental health treatment. With so few individuals seeking treatment, the vast majority of this financial burden is borne by the education, welfare, and justice systems. For these reasons and more, improving adolescent and young adult mental health is of key public health importance.

[1]A common definition of serious mental illness is a diagnosable mental, behavioral, or emotional disorder (excluding developmental and substance use disorders) “resulting in serious functional impairment, which substantially interferes with or limits one or more major life activities” (SAMHSA, 2008).

College and university campuses provide an ideal setting to identify, prevent, and treat mental illness during an epidemiologically vulnerable and psychosocially significant life period. For most of the 21 million students enrolled in U.S. postsecondary education (roughly half of all young adults nationwide) (NCES, 2012), their college years will be the only time when a single setting encompasses the main aspects of their daily existence—academic, residential, social, and health. Four-year campuses are typically integrated communities with substantial human and organizational resources that can be leveraged to enact change for entire student populations. There is a pressing need for change given that mental health problems are highly prevalent (Eisenberg, Gollust, Golberstein, & Hefner, 2007a), appear to be increasing (Cook, 2007; Twenge et al., 2010), and are typically untreated (Blanco et al., 2008) in college student populations.

Student mental health is a significant predictor of many important functional outcomes, including social connectedness (Berkman, 2001; Hefner & Eisenberg, 2009), academic performance and retention (Arria et al., 2013; Eisenberg, Golberstein, & Hunt, 2009a), and future employment/workplace productivity (Wang et al., 2007). Thus, improving student mental health would have not only a direct impact on individual wellbeing but also positive returns to colleges, universities, and society at large.

Problem Statement and Significance

In my dissertation, the main problem of interest is that the majority of college students with mental health problems do not receive treatment (Blanco et al., 2008; Eisenberg, Hunt, Speer, & Zivin, 2011a; Garlow et al., 2008). This problem is quantified as the “treatment gap”—the proportion of affected individuals not receiving mental health treatment (Kohn, Saxena, Levav, & Saraceno, 2004). On college campuses, the

treatment gap is wide. The National Epidemiological Survey on Alcohol and Related Conditions (2003) found that only 18% of college students with an apparent past-year mental disorder received any treatment (an 82% treatment gap). This estimate is consistent with findings from other national studies (American College Health Association, 2008; Blanco et al., 2008; Eisenberg et al., 2011a).

Across mental health conditions, the statistics are staggering: the American College Health Association's National College Health Assessment (2008) found that approximately 45% of students had, at some point within the past school year, felt "so depressed that it was difficult to function". Fewer than 50% of students with major depression have received any psychological therapy or medication in the past year (Eisenberg et al., 2011a). One in 10 undergraduates has made a plan for suicide (Garlow et al., 2008) and more than 1,100 students commit suicide on a yearly basis, making it the second leading cause of death in this population (Suicide Prevention Resource Center, 2004). Over 80% of students who commit suicide have never been seen at their campus mental health services (Kisch, Leino, & Silverman, 2005). Similarly, at colleges and universities across the country, prevalence rates are high and treatment rates low for eating disorders (Eisenberg, Nicklett, Roeder, & Kirz, 2011b) and anxiety (Grant, Kaplan, Shepard, & Moore, 2003).

Though numerous mental health interventions have sought to promote student help-seeking, their success has been limited (Eisenberg, Hunt, & Speer, 2012a). The vast majority of interventions are based on conceptualizations of help-seeking that attribute service non-utilization to barriers such as stigma, information deficits, and financial constraints (Biddle, Donovan, Sharp, & Gunnell, 2007). While interventions

have sometimes achieved desired effects for secondary outcomes (e.g., they have lowered stigma or increased knowledge and self-efficacy), rarely and inconsistently have interventions had a direct impact on students' actual mental health service utilization. Campus mental health researchers suggest that current conceptualizations and intervention approaches are insufficient for understanding and addressing students' non-help-seeking (Biddle et al., 2007; Eisenberg et al., 2012a).

Dissertation Outline

The purpose of my dissertation is to understand and address the mental health treatment gap on college campuses. The dissertation consists of five complementary chapters, with the second and third chapters building towards the fourth. Chapters 1 and 5 are the introduction and conclusion, respectively. Chapter 2 is a critical review of campus mental health help-seeking research and practice. I begin by critiquing traditional conceptualizations of help-seeking and the implicit and explicit assumptions therein. I go on to review the most common mental health help-seeking interventions used on college campuses, synthesizing their strengths, limitations, and evidence of effectiveness. In the third chapter, I examine the campus mental health treatment gap through detailed descriptive analyses. Using primary data, I report help-seeking rates overall, by condition (e.g., depression, anxiety, and eating disorders), by treatment modality (e.g., therapy/counseling and medication), and by student sub-group (e.g., gender, race/ethnicity, and academic discipline). I also examine barriers to service utilization, identifying the most commonly reported reasons for non-help-seeking among students with apparent unmet need. Based on these analyses, I argue that current interventions (as reviewed in chapter 2) are inadequate for addressing the preferences

and needs of students with untreated mental health problems. In response to this, chapter 4 introduces and evaluates a new approach for narrowing the campus mental health treatment gap. The approach is based on concepts from behavioral economics and social psychology and is applied in a large-scale, online intervention designed to promote help-seeking among undergraduates with untreated symptoms of eating disorders. The conclusion focuses on future directions for research and practice related to mental health service utilization on college and university campuses.

Dissertation Parameters and Key Terms

In my dissertation, the population of interest is undergraduate students pursuing bachelor's degrees from U.S. colleges and universities. For several reasons, as described above, this is a particularly significant population and setting for mental health research and policy. I concentrate primarily on the most common mental health conditions within this population—depression, anxiety, and eating disorders. Specifically, my research focuses on college students' help-seeking for mental health conditions. As such, it is important to clarify the terms help-seeking and help-seeking intervention.

"Help-seeking" is defined throughout this dissertation as the behavior of actively seeking support from other people regarding mental or emotional health concerns. Help-seeking can be formal (therapy or medication provided by mental health professionals) or informal (support from friends, family, or other non-professionals) (Rickwood, Deane, Wilson, & Ciarrochi, 2005). My dissertation is primarily concerned with formal help-seeking.

“Help-seeking interventions” aim to increase use of appropriate services among college students with mental health problems. In other words, these strategies concentrate mainly on increasing formal help-seeking. Unlike clinical interventions delivered to those already in treatment (e.g., providing cognitive behavioral therapy), help-seeking interventions are “population-level” or “public health” approaches aimed at identifying and connecting students in need with appropriate mental health services. In this way, successful help-seeking interventions are intended to lead to clinical intervention for students with untreated mental illnesses.

Throughout this dissertation, the terms “mental health problems”, “mental health conditions”, “mental disorders”, and “mental illnesses” are used interchangeably. This is consistent with the use of these terms in the literature examined throughout.

CHAPTER 2: HELP-SEEKING CONCEPTUALIZATIONS AND INTERVENTIONS

Chapter Overview

Help-seeking has a long history of multidisciplinary research. The term originated from the sociological study of illness behavior, or "the way in which symptoms are perceived, evaluated, and acted upon by a person who recognizes some pain, discomfort, or other signs of organic malfunction" (Mechanic & Volkart, 1961, 52). Help-seeking is a complex, multistage process that has attracted the attention of researchers across disciplines, including scholars from public health, psychology, sociology, and economics. Continued interest in this area stems from an expectation that help-seeking, particularly from a professional source, is a highly adaptive behavior that has a "positive ongoing impact on an individual across the lifespan" (Rickwood et al., 2005, 5). Appropriate help-seeking is widely acknowledged to provide "protection against a variety of mental health risks" (Rickwood et al., 2005, 5). For example, professional mental health service utilization has been found to reduce imminent suicide risk (Rudd et al., 1996). In other words, interest in help-seeking is motivated by recognition of the beneficial—even life-saving—nature of this behavior.

In this chapter, I offer a synthesis and critique of help-seeking theories and campus-based interventions to promote help-seeking. The chapter is designed to accomplish three objectives: (1) to describe conceptualizations of the help-seeking process; (2) to offer a critical review of help-seeking theories, challenging their implicit

and explicit assumptions; and (3) to provide an overview of commonly implemented campus-based help-seeking interventions.

Help-seeking: Process, Theories, and Models

Overview of the Help-seeking Process. Despite decades of mental health research and intervention efforts, there is no clearly agreed upon definition or standard measure of help-seeking (Rickwood & Thomas, 2012). There is, however, general consensus that help-seeking is an active behavior involving the receipt of support from others (Rickwood & Thomas, 2012).[2] In the mental health literature, there is also consensus that help-seeking is a multistage process whereby individuals experience a mental health problem, recognize the problem, perceive a need for help, decide to seek help, and act on this intention (Greenley & Mullen, 1990; Rickwood & Thomas, 2012; Saunders & Bowersox, 2007; Shapiro, 1984). The help-seeking process (*see **Figure 1***) is thought to be sequential; in particular, it is presumed that problem recognition, perceived need, and help-seeking intentions "must occur for help-seeking behavior to transpire" (Cornally & McCarthy, 2011, 283). The process is presumed to be linear, with individuals progressing from stage to stage. Moving through the process, the personal or internal stages (symptom onset, problem recognition) become increasingly interpersonal, culminating in pursuit of external support (Rickwood et al., 2005).

At each stage of the process, researchers have identified factors thought to either facilitate or impede progress towards help-seeking behavior. Much of the research on help-seeking has focused on barriers to treatment utilization (*shown in the bottom two boxes in **Figure 1***), which can be categorized broadly as "person-related"

[2]While individuals can receive help and even enter treatment against their will (through force or mandate), this is distinct from the agentic behavior that categorizes help-seeking.

(i.e., cognitive) and “treatment-related” (i.e., structural) (Saunders, Zygowicz, & D'Angelo, 2006).

As currently conceptualized, the early stages of seeking help involve primarily cognitive processes; the literature emphasizes denial, emotional incompetence (inability to recognize or manage emotions), and stigma as early stage barriers (Belloch, del Valle, Morillo, Carrió, & Cabedo, 2009; Ciarrochi & Deane, 2001; Cooper, Corrigan, & Watson, 2003; Cunningham, Sobell, Sobell, Agrawal, & Toneatto, 1993; Vogel, Wade, & Haake, 2006). Of the many potential barriers to mental health treatment, stigma has received the most attention. Stigmatizing attitudes (negative stereotypes or prejudices about mental illness) are typically classified as either “self-stigma” (negative attitudes held by an individual with a mental illness) or “public stigma” (negative attitudes endorsed by others) (Corrigan, 2004).

In the latter stages of help-seeking, the most commonly emphasized barriers are negative attitudes and lack of knowledge about mental health treatment. Failure to progress from perceived need to help-seeking intentions to help-seeking behavior is often attributed to fear of seeking treatment, belief that treatment is ineffective, and lack of knowledge about available or appropriate service options (Jorm, 2000; Link, Struening, Rahav, Phelan, & Nuttbrock, 1997; Munson et al., 2012; Vogel, Wester, Wei, & Boysen, 2005).

Other traditionally-emphasized impediments to care fall into the category of structural or “treatment-related” barriers. These include cost and access to treatment (i.e., availability, distance, and transportation) (Gallucci, Swartz, & Hackerman, 2014;

Kessler et al., 1997; Kourany, Garber, & Tornusciolo, 1990). On a fundamental level, the stages of help-seeking and the potential barriers therein are rarely challenged.

Various help-seeking models and theories are used to explain how individuals move through the help-seeking process, as described above. In college student mental health literature and health services research more broadly, there is no single, unifying theory or model of help-seeking (Rickwood et al., 2005); rather, there are several complementary frameworks.

Reviewed here in chronological order are the three theoretical models of help-seeking most commonly used to inform college mental health help-seeking research: the Health Belief Model, the Socio-Behavioral Model of Health Service Utilization, and the Theory of Planned Behavior. Note that these models were designed to understand service utilization in general and have been modified and applied in mental health research. The theories reviewed throughout this section are important because they inform campus-based help-seeking interventions.

The Health Belief Model. Originally developed to predict use of preventative healthcare (e.g., screening tests and vaccinations), the Health Belief Model (HBM) (Rosenstock, 1966) has the longest history of the three theories reviewed here. A social psychology framework, the HBM has been widely applied to explain health behaviors, including mental health service utilization (Becker & Maiman, 1975; Fishbein, Triandis, Kanfer, Becker, & Middlestadt, 2001).

In the HBM, help-seeking is determined by four factors: (1) susceptibility ("the degree to which an individual feels vulnerable or susceptible to a particular health condition"), (2) severity ("the extent to which he feels that contracting that condition

would have serious consequences"), (3) effectiveness ("the person's belief about the availability and effectiveness of various courses of action"), and (4) cost ("perceived benefits of taking action and barriers to action") (Rosenstock, 1966, 99-100).

As the name implies, treatment utilization in the HBM is determined by a set of beliefs corresponding to the factors above: individuals will seek help if they believe themselves to be vulnerable to a condition, believe the condition to be serious, believe treatment to be effective, and believe the benefits of treatment to exceed the costs (Rosenstock, 1990). In a campus-based intervention study applying the HBM, the authors hypothesized that college students at elevated suicide risk would seek mental health treatment under the following conditions:

> "if they perceive themselves as being susceptible to suicidal behavior or if they accept having a mental health condition that makes them susceptible to this risk; if they believe that leaving the mental health condition untreated would have serious consequences (whether social, emotional, or, in the case of suicidal thoughts and behavior, injury or death); if they believe that accessing available mental health services would be beneficial in ameliorating the severity of their symptoms; and if they believe that the barriers or cost associated with seeking professional help (such as discomfort, time, or inconvenience) would be outweighed by the benefits" (Czyz, Horwitz, Eisenberg, Kramer, & King, 2013, 399).

The HBM is limited in its capacity to predict help-seeking behavior when costs and benefits are comparable: "the individual is highly oriented toward acting to reduce the likelihood or impact of the perceived health danger. He is equally highly motivated to avoid action since he sees it as highly unpleasant or even painful" (Rosenstock, 1966, 100). Another important limitation, as discussed below, is that the HBM presumes that individuals can accurately assess treatment costs and benefits. This may be an inaccurate assumption for those with mental illnesses, as described below.

The Socio-Behavioral Model of Health Service Utilization (SBM) (Andersen, 1968) takes into account individual, social, and structural factors associated with seeking care. The SBM emphasizes three sets of factors that determine treatment use: predisposing factors (demographic characteristics, social structure, and health beliefs), enabling factors (insurance and access to care), and need factors (perceived need and symptom severity).

The SBM consolidates the socio-psychological elements of the HBM into the category of predisposing factors. Where the HBM focuses on how individuals' beliefs affect help-seeking, the SBM is more oriented towards the influence of the health system and issues of access. The SBM suggests that if individuals have positive health beliefs, reinforcing social structures (e.g., family and community support), a recognized need, and access to care, they will seek treatment.

In the SBM, access is the final contingency necessary for help-seeking action. In research applying the SBM, the key independent variables are typically enabling factors (i.e., treatment-related barriers such as access to care), which Andersen (1995) classifies as highly mutable (i.e., amenable to intervention). Overall, the SBM assumes that increasing access will increase treatment utilization. Although financial constraints are a prominent barrier to mental health care in general populations (Sturm & Sherbourne, 2001), nearly all students at four-year colleges (95%) have adequate health insurance and access to free campus counseling and primary care services (Eisenberg, Golberstein, & Gollust, 2007a). This suggests that key aspects of the SBM may not be as relevant in the college context.

The Theory of Planned Behavior. A social-psychological approach, the Theory of Planned Behavior (TPB) (Ajzen, 1988; Ajzen, 1991) sees health behaviors as goal-oriented. It emphasizes intentions as strong predictors of behavior: “the stronger the intention to engage in a behavior, the more likely should be its performance” (Ajzen, 1991, 181). According to the TPB, intentions are determined by three factors: (1) attitudes (“the individual’s positive or negative evaluation of performing the behavior”), (2) subjective norms (“the person’s perception of the social pressures put on him to perform or not perform the behavior in question”), and (3) perceived behavioral control (Ajzen, 1985, 12). Azjen (1985) describes perceived behavioral control as being akin to the concept of self-efficacy, which is “concerned with judgments of how well one can execute courses of action required to deal with prospective situations” (Bandura, 1982, 122).

These factors are in turn determined by salient beliefs about the behavior—specifically, behavioral beliefs (perceived costs and benefits associated with the behavior), control beliefs (“factors that increase or reduce the perceived difficulty of performing the behavior in question”), and normative beliefs, which are “concerned with the likelihood that important referent individuals or groups approve or disapprove of performing a given behavior” (Ajzen, 1991, 195-196). Normative beliefs provide a basic mechanism for the role of social and cultural influence on help-seeking behavior: individuals are more likely to perform a behavior that others approve of (Ajzen, 1991). Overall, the TPB posits that one’s help-seeking intentions are a direct antecedent to help-seeking behavior (Ajzen, 1991; Fishbein & Ajzen, 2005):

“the more favorable one’s attitude toward the behavior, the stronger the subjective norm and perceived behavioral control with regard to the behavior, the greater will be one’s

intention to execute the behavior. One's intentions to perform the behavior will then directly influence one's enactment of the focal behavior" (Chan, 2013, 576).

In a systematic review of mental health help-seeking studies, 20% of which were conducted on college and university campuses, the TPB was the most commonly applied theoretical framework (Rickwood & Thomas, 2012). In studies informed by the TPB, the key independent variables are attitudes and beliefs, and the primary outcome is help-seeking intentions, which are assumed to reflect future, often unmeasured, behavior (Rickwood & Thomas, 2012). Much of the campus mental health research, as reviewed below, measures only the presumed determinants of service utilization, relying on a conceptual link to unobserved help-seeking behavior.

Limitations of the HBM, SBM, and TPB. Collectively, the HBM, SBM, and TPB offer a set of psychological and structural determinants of help-seeking (demographic characteristics, access, need, beliefs, attitudes, and intentions). These models are best suited to answer questions about whether individuals ever use services and who is more or less likely to seek help (i.e., a profile of service users) (Apsler & Rothman, 1984; Haug & Lavin, 1983). While these are undeniably important questions, there are others that cannot be adequately addressed by these models.

More specifically, there are at least three limitations to the help-seeking theories reviewed above. First, the models cannot account for the direct impact of mental illness in the stages of help-seeking. With mental illnesses, the median delay from symptom onset to first treatment contact is nearly a decade (Wang et al., 2005). The HBM, SBM, and TPB are unable to fully understand delays to treatment and how various factors—including symptoms and perceived need—may evolve over time. The HBM, SBM, and TPB assume rationality—individuals decide whether or not to seek help by weighing the

costs and benefits of treatment. Mental health symptoms may directly influence how costs and benefits are assessed (e.g., anxiety may heighten the psychological costs and depressed mood may decrease the perceived future benefits of treatment). The HBM, SBM, and TPB are unable to account for potential variations in how and what individuals may construe as rational behavior.

Lack of attention to the potential impact of mental illness on help-seeking is not necessarily an oversight of these models given their widespread use across health conditions. That said, there are opportunities to refine help-seeking models specific for mental health. Researchers suggest that this is "much needed and long overdue" (Rickwood & Thomas, 2012, 180). In response to this, chapter 4 lays out a new conceptual framework integrating insight from behavioral economics and social psychology alongside promising features of existing theories.

A second and related limitation is that "illness severity" is poorly defined in the models (namely in the HBM and SBM). Within the construct of illness severity, distress and impairment (physical, social, etc.) are often used interchangeably (Saunders & Bowersox, 2007). This creates challenges for interpreting evidence of the association between severity and treatment utilization (Bell, Montoya, Richard, & Dayton, 1998; Kessler, Chiu, Demler, & Walters, 2005). In the context of mental illness, distress and impairment may have very different effects on treatment use (Saunders & Bowersox, 2007). Elevated levels of distress may motivate individuals to seek help, while elevated levels of impairment, particularly over time, may impede this process.[3] For example, individuals with mental illness often have poor sleep habits, a physical impairment

[3]In investigating symptom severity as a potential mediating factor, at least one study found a non-significant relationship between levels of distress and intentions to seek help in college populations (Oliver, Reed, Katz, & Haugh, 1999).

known to disrupt cognitive functioning (Li et al., 2013). Increasing levels of sleep deprivation could further impair cognition (e.g., ability to accurately assess a need for help), in turn impeding individuals' help-seeking. This may explain inconsistent findings in the literature regarding the impact of illness severity on treatment seeking for mental health. While a limitation for mental health services research, this is not necessarily a limitation in the broader sense given that these models were designed to understand service utilization in general, not specifically mental health service utilization.

Finally, and most glaringly, the models say very little about the connection (or lack thereof) between help-seeking intentions and help-seeking behaviors. Researchers have acknowledged and lamented this limitation (Joyce & Weibelzahl, 2011; Vogel, Wester, & Larson, 2007). The majority of TPB research has focused on the prediction of help-seeking intentions rather actual help-seeking behavior (Baranowski, 1992). The strength of associations between attitudes, intentions, and behaviors is actually quite weak, particularly for the relationship between help-seeking intentions and behaviors (Armitage & Conner, 2001; Hardeman et al., 2002). A meta-analysis of intervention studies testing the intention-behavior link found that large changes in intentions result in only small changes in behavior (Webb & Sheeran, 2006).

While much has been learned through use of the HBM, SBM, and TPB, these models have limited explanatory power for scenarios in which individuals do not utilize treatment despite access to care, positive attitudes, and social reinforcement. As revealed in the next chapter, this scenario reflects the profile and behavior of many college students with untreated mental health problems. Despite their limitations, the HBM, SBM, and TPB continue to guide current understanding of help-seeking behavior,

providing direction for research and intervention development. These theoretical models are inherently linked to construct measurement by virtue of what they emphasize as determinants of help-seeking behavior: access, need, knowledge, attitudes, beliefs, self-efficacy, and intentions. Likewise, they are integral to campus mental health intervention design and implementation because they identify barriers to service utilization; the vast majority of campus mental health interventions reviewed in the following section seek to minimize barriers suggested by these models. Many of these interventions have shown positive effects on students' attitudes and beliefs related mental health treatment. Based on assumptions of the theoretical models reviewed above, the findings of these studies are often interpreted as having improved help-seeking *behavior*. In reality, help-seeking behavior is rarely measured and even more rarely improved.

Campus-based Help-seeking Interventions

This section provides an overview of the three most common help-seeking interventions: (1) stigma reduction and awareness campaigns, (2) screening-linkage programs, and (3) gatekeeper-trainings (GKTs). Findings are presented from help-seeking intervention studies conducted on college and university campuses. To be included, studies had to be conducted with college student populations and published in peer review journals before January 2015; the 32 studies reviewed here (*see* ***Table 1***) represent close to a comprehensive set of help-seeking intervention studies meeting the basic aforementioned inclusion criteria.

Stigma Reduction and Awareness Campaigns. On college campuses, stigma reduction and awareness campaigns are the most common strategy used to promote

help-seeking (Gulliver, Griffiths, Christensen, & Brewer, 2012).[4] This strategy incorporates education, advocacy, and contact (Heijnders & Van Der Meij, 2006). Education and advocacy involve efforts to improve students' knowledge related to mental health symptoms and treatments; examples include presentations, discussions, and flyers about how and where to find mental health resources.

In the research literature, the term "mental health literacy" is often used to describe knowledge and beliefs about mental disorders, which aid in their recognition, management, or prevention (Kelly, Jorm, & Wright, 2007). Areas of mental health literacy include knowledge about the importance of mental health treatment, knowledge about the efficacy of available treatment options, and related attitudes about mental illness. It is believed that increasing mental health literacy "may lead to better outcomes for those with mental disorders, either by facilitating early help-seeking by young people themselves, or by helping [others] to identify early signs of mental disorders and seek help on their behalf" (Kelly et al., 2007, 26).

Contact refers to exposure to individuals struggling with mental illness (either face-to-face or through film/media), with the objective of reducing stigmatizing attitudes (Heijnders & Van Der Meij, 2006). An example of a contact-based intervention is the Active Minds, Inc. Speakers Bureau (www.activeminds.org/our-programming/speakers-bureau), which brings individuals who have struggled with mental illnesses to college campuses to present and facilitate discussions. Though stigma reduction campaigns

[4]It is important to note that not all stigma reduction campaigns are related to help-seeking; some interventions are purely about changing attitudes towards individuals with mental illnesses (e.g., Desforges et al., 1991; Mann & Himelein, 2008). This relates to a distinction between stigma surrounding mental illness and stigma surrounding mental health treatment (though this distinction is not always readily apparent). To be included in this review, studies had to describe the relevance of the stigma-reduction campaign for measures related to student help-seeking.

are widely used on college campuses, there is little empirical evidence for these programs. Many campuses do not evaluate their anti-stigma campaigns and there are inherent challenges in conducting this type of research, as discussed in the following section.

That said, there have been several empirical studies of campus-based stigma reduction and awareness campaigns in recent years. In a randomized control trial (RCT), Ritterfeld and Jin (2006) examined the effects of an entertainment-education strategy on students' mental health literacy using a pretest-posttest design. An accurate and empathic media portrayal combined with an educational trailer was found to increase knowledge about mental illnesses and reduce stigma. In a similar RCT, Kaplan, Vogel, Gentile, and Wade (2012) conducted a video-based intervention designed to decrease stigma and improve help-seeking attitudes and perceptions of peer norms. Participants were randomly assigned to one of three conditions: (1) repeated exposure (students viewed the video three times), (2) single exposure, and (3) control. The authors conducted repeated measure analysis of variance (ANOVAs) to test changes in each of the outcomes across the three conditions. Undergraduates in the repeated exposure group improved significantly more than those in the other two conditions on attitudes and perceptions of peer norms; there was no effect on stigma. Improvements in attitudes and perceptions were sustained at eight-week follow-up. A major limitation of these studies, as discussed below, is their failure to measure their ultimate outcome of interest: help-seeking behavior.

Theriot (2013) measured the effects of a first-year educational seminar about mental illness. The seminar met for two 50-minute sessions per week for seven weeks.

The first half of the course addressed “foundation questions like *What is mental illness?* and *How do we diagnose mental illness?* as well as concepts of stigma” (p. 123). The second half of the seminar was spent reviewing and critiquing representations of mental illness in popular media. The author used a pretest-posttest design to measure changes in attitudes toward mental illness among students in the treatment condition (mental illness seminar) and those in the control condition (general seminars). Results revealed that students in the treatment condition had fewer stigmatizing attitudes than those in the control condition.

Though stigma-reduction campaigns are widely used on college campuses as a strategy to improve help-seeking, there is little empirical evidence that these programs are successful in stimulating help-seeking behavior. As in the studies above, interventions are often effective in reducing stigma, improving attitudes towards mental health treatment, and increasing knowledge (even though baseline rates are relatively good). Researchers often suggest a conceptual extension of these findings to unobserved future help-seeking behavior (e.g., “attitudes and beliefs predict whether individuals actually seek help” (Gonzalez, Tinsley, & Kreuder, 2002, 59)). Only three of the stigma reduction intervention studies reviewed here measured help-seeking behavior despite their stated purpose of promoting help-seeking.

In a RCT conducted at a large public university, Sharp, Hargrove, Johnson, and Deal (2006) evaluated the effects of a brief mental health literacy intervention. Students in the treatment condition were exposed to a lecture geared towards decreasing stigma and normalizing mental illness. The lecture sought to ameliorate fear of mental health services and emphasize personal responsibility to seek help. In the control condition,

students watched a video about astronomy. The researchers conducted an independent sample t-test to estimate effects for a continuous attitude score and a chi-squared test to compare the proportion of students in each condition who reported seeking mental health treatment during the study period. At four-week follow-up, the researchers found that students exposed to the intervention had improved help-seeking attitudes but these effects did not translate into increased help-seeking behavior.

In a nine-campus RCT, Reavley, McCann, Cvetkovski, and Jorm (2008) estimated effects of MindWise, a multifaceted, universal mental health literacy intervention comprised of emails, posters, campus events, factsheets/booklets, and Mental Health First Aid training courses. Multivariate logistic regression models revealed that the intervention made “few improvements” (Reavley, McCann, Cvetkovski, & Jorm, 2014, 1664). There were no differences between intervention and control groups with regards to recognition of depressive symptoms, stigmatizing attitudes, beliefs about the helpfulness of mental health services, or intentions to seek help. Likewise there were no effects on help-seeking behavior. The authors concluded that “while education and awareness may play a role in improving mental health literacy, it is likely that, to reduce stigma, improve help-seeking and achieve changes in psychological distress, interventions would need to be more personalized and intensive” (p. 1664).

In a cohort study conducted on a small, private, religiously-affiliated university with below average treatment utilization and above average stigma levels at baseline, Schwartz, Nissel, Eisenberg, Kay, and Brown (2012) examined the effects of a multi-year campus-wide initiative designed to decrease stigma and increase help-seeking.

The researchers used a pretest-posttest design to measure aggregate changes from 2005 (baseline) to 2011 (follow-up). They found that campus-wide utilization rates (provided by the counseling center) increased at follow-up although not through the intervention's intended mechanism: "although utilization increased to national norms, levels of reported stigma remained significantly above national college norms, raising the intriguing possibility that stigma may not represent an absolute impediment to help-seeking" (p. 50).

Collectively, this evidence suggests that while stigma and awareness/knowledge deficits may be amenable to intervention, they are relatively uncommon issues that are but weakly related to help-seeking behavior. In practice, stigma reduction and awareness campaigns remain the most widely used strategy for promoting help-seeking in college and university student populations. All available evidence suggests that these efforts will do little to narrow the campus mental health treatment gap.

Screening and Linkage Programs. Another help-seeking strategy is to identify students in distress and link them with appropriate treatment options. Screening and linkage programs seek to increase access to and knowledge of available mental health services. Identification is commonly achieved through use of web-based mental health screens sent to all students or a sub-set of students presumed to be at higher risk (e.g., students with a history of substance abuse).

An example of this strategy is the American Foundation for Suicide Prevention's (AFSP) Interactive Screening Program (www.afsp.org), which uses an online assessment to identify suicidal students. These students are then sent personalized feedback from a trained counselor and invited to in-person consultations. Students also

have the opportunity to communicate with counselors through a secure web portal. The reach of this program, as with all screening-linkage programs in the college context, has been extremely limited. In a study conducted by Haas et al. (2008), just 8% of invited students completed the initial AFSP screen; over 90% of students did not engage with the intervention. Among students identified as at-risk for suicide, 13.5% linked to follow-up mental health treatment.

Building off the work of AFSP, King et al. (2014) conducted a RCT designed to increase treatment utilization for college students at risk for suicide. In this study, 25% of students completed the initial screen; 76 at-risk students were identified, with 41 randomized to an online intervention (*e*Bridge) that provided personalized feedback consistent with the tenants of motivational interviewing (MI) along with the opportunity for online counseling. Just 17% of students engaged in the online counseling component of the intervention. The 35 at-risk students in the control condition received MI but were not offered online counseling. The authors conducted logistic and linear regressions for binary and continuous outcomes, respectively, controlling for individual characteristics and baseline mental health status. At two-month follow-up, they found that *e*Bridge was associated with significantly higher scores on the Readiness to Access Help scale and lower stigma levels. The researchers also tested unadjusted differences in help-seeking between the treatment and control group: 28% of students in the treatment condition relative to zero percent in the control condition sought in-person mental health treatment during the study period; a chi-square test revealed this to be a significant difference. In a second study of the *e*Bridge intervention, the researchers examined self-reported barriers to mental health treatment among the sample of

students with elevated suicide risk. Notably, stigma was mentioned as an impediment to help-seeking by just 12% of at-risk students. The most commonly reported barriers were lack of urgency and time (Czyz et al., 2013).

Another form of screening and linkage interventions is triaging. One such example is the National College Depression Partnership, which conducts screening in primary care settings (e.g., campus health centers) with the aim of early detection and intervention. Results from this initiative provide the most encouraging evidence of any campus-based help-seeking intervention. In a study on eight campuses, nearly 90% of those students identified as having symptoms of depression engaged in treatment over a three-month period (Chung et al., 2011). There are two important limitations to this specific study: first, no benchmark data were collected, thus it is impossible to ascertain a causal effect on treatment uptake; second, it is important to keep in mind that students in this sample were, by virtue of being at a campus primary health center, already help-seekers of a kind. There may be important unexplored differences between students who do and do not visit their university health center for any reason. In general, studies of campus-based stigma reduction and awareness campaigns, screening and linkage programs, and GKTs do little to account for self-selection (e.g., students who choose to attend a stigma reduction program on campus may already have lower stigma) and other potential confounding factors (e.g., unknown temporal order of suicidal behavior and treatment).

As previously described, approximately one-third of college students suffer from a clinically significant mental health problem (Eisenberg, Hunt, & Speer, 2013). Overall, screening and linkage interventions fail to reach most of these students. However, for

the minority of students who engage initially, there is some evidence to suggest positive effects for treatment linkage.

Gatekeeper-trainings. GKTs are universal, primary prevention programs that aim to: (1) increase knowledge about mental health problems and the ability of gatekeepers to recognize and appropriately intervene in the face of such problems, and, as a result, (2) increase help-seeking behaviors in the target population. The term "gatekeeper" was first defined to be "any person to whom troubled people are turning for help" (Snyder, 1971, 39). Bartenders, hairdressers, postal carriers, athletic coaches, waitresses, and many others have been recognized as potential gatekeepers based on their natural position to carry out informal observation, detection, and assistance for those in distress (Cross, Matthieu, Lezine, & Knox, 2010). GKTs are typically brief, the most well-known programs lasting between one and three hours.

On college and university campuses, students (particularly resident advisors (RAs)), faculty, staff, and coaches have all been trained as gatekeepers. Though there are no formal data on how many colleges are using GKTs, the number is at least on the order of several hundred (Eisenberg et al., 2012a). For example, one popular program, Question, Persuade, Refer (QPR), is taught on more than 300 university campuses (www.qprinstitute.com).

The effects of GKTs are commonly studied for trainees only (i.e., intervention effects for individuals trained as gatekeepers). The main outcomes of campus-based GKT studies are typically assessed using surveys to measure trainees' knowledge, attitudes, self-efficacy, intervention skills, intervention intentions, and intervention behaviors. In college settings and elsewhere, there is limited evidence that GKTs

produce positive outcomes in target populations; in other words, the impact of GKTs on help-seeking behavior and mental health in general student communities is largely unknown. A comprehensive review of GKT research published in 2013 revealed that no studies of GKTs in the college setting had measured effects in the general student community (Lipson, 2014). Since this time, there has been one study that has measured such effects. All but one of the GKT studies reviewed here used simple pretest-posttest study designs, testing effects for trainees with t-tests and chi-square tests. Results are reviewed here by outcome.

Knowledge is measured in two ways in the GKT literature: self-perceived and objective. An example of a survey item measuring self-perceived knowledge is: “I know how to recognize a student who is in distress” (Cimini et al., 2014, 96). Objective knowledge is often measured through true-false questions about suicide prevention facts and warning signs/symptoms of mental illnesses. Of the GKT studies reviewed here, 10 out of 12 measured interventions effects on trainees’ knowledge (either self-perceived, assessed, or both), with all studies finding positive effects on self-perceived knowledge and all but one study finding positive effects on objective knowledge.

Attitudes are defined as how trainees feel about a relevant topic (e.g., levels of stigma). Five of the six studies that measured this outcome found that GKT improved trainees’ attitudes from baseline to initial follow-up. Self-efficacy is defined as trainees’ beliefs that they can successfully accomplish a gatekeeper task (e.g., perceived ability to persuade someone to get help). All eight studies that measured self-efficacy found that GKT had a significant positive effect for trainees from pretest to posttest. For example, in a cohort study of campus community members trained as gatekeepers

(students, staff, and faculty), Mitchell, Kader, Darrow, Haggerty, and Keating (2013) found that QPR increased trainees' self-perceived ability to persuade and connect at-risk students with mental health services.

Skills are defined as proven expertise of GKT objectives as assessed by someone other than the trainee. Skill acquisition is considered one of the most valid measures of GKT efficacy (Rodgers, 2010). Only three studies met criteria for measuring gatekeeper skills. Tierney (1994), in a cohort analytic study, found that student trainees had demonstrably better suicide-specific intervention skills but not general helping skills or abilities to recognize facilitative responses. In a cohort study of university employees (faculty, staff, and coaches) and undergraduate RAs, Cross et al. (2010) found that QPR increased gatekeeper skills: at baseline, just 10% of participants met criteria for acceptable skills, while 54% met criteria post-GKT. Though promising, these effects were measured immediately after the training and likely represent, as the authors note, the "best case scenario" (p. 156). Furthermore, while suicide-specific intervention skills (ability to question, persuade, and refer) increased significantly, there were no changes in observed general skills (e.g., active listening). Cross et al. (2010) describe the lack of general helping skills as "not surprising" because QPR "does not specifically focus on teaching "soft" skills such as empathic reactions" (p. 156). Overall, the researchers note that trainees' skills were "far from ideal for responding to a potentially life-threatening situation" (p. 156).

Behaviors are classified as either behavioral intentions (i.e., likelihood of intervening) or actions (i.e., actually intervening or making a referral to professional mental health care). An example of a behavioral intention item is: "How likely is it that

you would talk with someone you know about their feelings if you thought they needed help?" (Pearce, Rickwood, & Beaton, 2003, 5). From baseline to initial follow-up, GKT increased behavioral intentions in three of four studies to measure this outcome. Despite positive effects on intentions to intervene in these three studies, this did not translate to intervention behavior (further evidence of the prevailing disconnect between intentions and behaviors). GKT had no effect on trainees' actual behaviors (intervening or referring to care) in four of five studies to measure this outcome. In sum, empirical evidence suggests that GKTs are effective in producing positive changes in trainees' knowledge, attitudes, self-efficacy, and intentions, but less so for skills and actual behaviors.

As mentioned, most GKT studies have measured effects for trainees' self-reported outcomes, without measuring actual helping behavior and population-level service utilization and well-being. Just one campus-based GKT study has measured intervention effects for the target population. In a large-scale RCT, Lipson et al. (2014) evaluated the effectiveness of the Mental Health First Aid (MHFA) program delivered to RAs on 32 college and university campuses. The design and scope of this study enable one of the most comprehensive evaluations of a GKT program to date. Campus residence halls were assigned to the intervention (MHFA plus pre-existing trainings) or control condition (pre-existing trainings only) using matched pair randomization. The researchers collected data from two sources: (1) surveys completed by the students (RAs and residents), 2-3 months pre- and post-intervention; and (2) utilization records from campus mental health centers, aggregated by residence. The study measured the following outcomes: self-perceived and objective knowledge (for RAs), attitudes (for

both RAs and student residents), self-efficacy (for RAs), intervention intentions (for RAs), intervention behaviors (for RAs), help-seeking behaviors (for both RAs and student residents), and mental health symptoms (for both RAs and student residents). MHFA was found to increase RAs' subjective knowledge and self-efficacy (self-perceived ability to identify students in distress and confidence to help). There were no apparent effects, however, on help-seeking (or any other outcomes) in the target population of student residents. Based on these findings, the authors concluded that "GKTs may not be fully achieving their ultimate objectives. Self-reported knowledge and self-efficacy appear insufficient for promoting intervention behaviors among gatekeepers or help seeking and well-being in student communities. GKTs may need to be revised, and entirely new strategies may need to be considered" (p. 618).

Critique of Campus-based Help-seeking Intervention Research

For campus-based help-seeking interventions, practice is far ahead of research. While most colleges and universities have implemented some type of intervention to promote mental health treatment utilization, these efforts are rarely evaluated. The sample of studies considered in the previous section (N=32) represents close to a comprehensive review of help-seeking intervention studies for college students. Overall each of the intervention approaches has shown promise in improving certain outcomes (e.g., attitudes, knowledge, and self-efficacy). The main problem with this body of research is not an inconsistency; in fact, findings are relatively consistent across studies. The problem is that the interventions have failed to increase rates of help-seeking among students in need (most in fact have failed to even measure the key outcome). As a whole, the evidence-base is quite weak in quantity, efficaciousness, and

scientific rigor. The present section offers a critique of help-seeking intervention research organized by strategy.

Stigma Reduction and Awareness Campaigns. While stigma reduction and awareness campaigns have several advantages in practice, namely their potential to affect entire student communities, they have weak empirical support. There are two main limitations to this research. First, interventions to address stigma and mental health literacy rarely measure actual help-seeking behavior. This limitation was acknowledged by several of the authors. Demyan and Anderson (2012) note "a primary limitation of the current investigation is that it examined attitude and intention change but not actual help-seeking behavior. Future investigations should consider assessing actual help-seeking behavior, given the potential for disparity between having high intentions to seek help and performing the actual help-seeking behavior" (p. 227). Gonzalez et al. (2002) confess "this study did not ask about actual help-seeking behaviors after exposure to the interventions, which might differ from reported attitudes and opinions" (p. 61). Theriot (2013) similarly suggests, "attempts to measure the long-term benefits of the seminar also should measure the relationship between attitudinal changes and actual use of mental health services…Better utilization of mental health services by students who completed this seminar would be an ideal and exceptionally meaningful outcome" (p. 136). Though the status quo, it is quite shocking that studies on the most prominent campus mental health help-seeking intervention rarely measure the ultimate outcome of interest.

Second, anti-stigma campaigns focus on barriers that do not appear to be particularly salient among today's college students. Despite their popularity, anti-stigma

and mental health literacy interventions may be somewhat irrelevant given that rates of stigma are low and knowledge high on campuses across the country (as shown in chapter 3). Evidence from observational and intervention research suggests a weak connection, if any, between stigma and non-help-seeking (Eisenberg, Speer, & Hunt, 2012b; Schwartz, Nissel, Eisenberg, Kay, & Brown, 2012; Sharp, Hargrove, Johnson, & Deal, 2006). This reality is not widely recognized.

When evaluating stigma reduction and awareness campaigns, campus mental health researchers should include measures of help-seeking behavior whenever possible; if new evidence can consistently demonstrate a weak link from attitudes and knowledge to behavior, it may help to shift the paradigm towards interventions that align more closely with students actual needs. In the meantime, campus resources are expended on these programs while the mental health treatment gap remains problematically wide.

Screening and Linkage Programs. Evidence suggests that screening and linkage programs can be effective for students who engage in the intervention. That said, only a small proportion of students choose to participate. A key unanswered question is how to increase engagement. To address this question, a simple first step would be to conduct brief, online follow-up assessments with non-responders. To date, there have been no studies that have examined non-responders (their individual characteristics, mental health needs, and reasons for not engaging in the intervention). As mentioned, there may be important differences between students who do and do not participate in screening-linkage initiatives. Clearly one would expect low response rates from follow-up assessments with initial non-responders; thus incentives may be

necessary. Any data from non-responders would make a valuable contribution to the evidence-base for screening and linkage programs and likely inform intervention refinement.

There are several missed opportunities in terms of study design and analytic methods for screening and linkage programs on college campuses. Given that there are many components and stages to these interventions (e.g., communication, screening, personalized feedback, online counseling, and in-person evaluation), more innovative study designs could be used to test the independent and additive effects of each element. For example, factorial design studies, in which students receive some random combination of feedback, online counseling, and other elements, could be used to test the impact of intervention components. As an extension of this, adaptive interventions (such as Sequential Multiple Assignment Randomized Trials (SMARTs)) could be used to determine the best combination and sequence of elements to include in screening and linkage interventions.[5] Importantly, adaptive intervention designs would allow for the intervention to vary based on students' characteristics, needs, and preferences (Lei, Nahum-Shani, Lynch, Oslin, & Murphy, 2012). Methods that allow for empirically-based tailoring would seem particularly necessary given that screening and linkage programs are not working for the vast majority of students.

To date, evaluations of screening and linkage programs have employed simple designs, typically assessing change over time with no control group or ability to isolate the effects of the various elements and stages of the intervention. Qualitative data are

[5]An adaptive intervention is a multistage process operationalized via a sequence of decision rules that identify when and how the intervention should be adjusted to maximize effectiveness for each subject. SMARTs are used to inform the development of adaptive interventions and involve multiple intervention stages corresponding to the decisions in the adaptive intervention (Dawson & Lavori, 2012; Lavori & Dawson, 2000; Murphy, 2005).

also notably lacking for screening and linkage programs, as well as for anti-stigma campaigns and GKTs. Interviews and focus groups could be used to better understand why screening and linkage programs are and are not working. In sum, enhancing the rigor of research around screening and linkage interventions could help to make these programs more effective at the population level.

Gatekeeper-trainings. For GKTs on college campuses, the evidence-base is dominated by certain outcomes (trainees' knowledge, attitudes, and self-efficacy) while little is known about effects for others (behaviors, skills, and population-level outcomes). The causal impact of GKTs is sometimes exaggerated, as on the website of a popular program: "through the efforts of the Yellow Ribbon Suicide Prevention Program more than 2,500 lives have been saved" (www.yellowribbon.org/Lflstats.html). In reality, little is known about the efficacy of GKTs for behavioral and population-level outcomes in the college context, or otherwise.

The main limitation of GKT research is the lack of objective evidence on the help-seeking behavior of target populations (i.e., at-risk students in the community). As with evaluations of stigma reduction and awareness campaign, GKT studies should measure actual help-seeking behavior and mental health outcomes among students; to date the only campus-based GKT study to have examined actual help-seeking behavior in the target population found no apparent intervention effects (Lipson et al., 2014). Relatedly, an important unanswered question is how changes in gatekeepers' knowledge and attitudes translate to behavioral change (i.e., intervening and referring students to professional care) (Eisenberg et al., 2012a). Although many of the studies reviewed here found positive effects for trainees' knowledge, attitudes, self-efficacy, and

intentions, research on mental health interventions cautions that attitudes and intentions tend to be poor predictors of future behavior (Glasman & Albarracín, 2006). Indeed, the studies reviewed here found weak associations between gatekeepers' knowledge, attitudes, self-efficacy, intentions, and their actual intervention behaviors.

An obvious but important objective for future research should be further evaluation of these programs through RCTs. This will help to determine causality between GKTs and understudied outcomes such as gatekeeper skills, gatekeeper referral patterns, student help-seeking, and student wellbeing. To date there has been only one published RCT of a campus-based GKT (Lipson et al., 2014).

Finally, extant research on campus-based GKTs suggests that positive effects often diminish over time. For example, in a cohort study evaluating QPR delivered to university staff, faculty, and students, Indelicato, Mirsu-Paun, and Griffin (2011) found positive training effects for self-perceived knowledge, attitudes, self-efficacy, and behavioral intentions from pre-test to post-test. At three-month follow-up, however, participants indicated a need for additional information about available resources, listening skills, how to express concern, and how to persuade someone to get help. That said, most studies only measured effects immediately post-training. From a research perspective, it will be important to measure effects over longer time horizons to allow trainees to apply what they have learned and for effects to mature. Research should focus on assessing gatekeepers' long-term abilities to identify, intervene, and refer at-risk students to appropriate care. From the institutional perspective, colleges and universities are investing time and resources to implement GKTs. To protect this initial investment, institutions should offer refresher sessions to preserve the knowledge

and skills of trained gatekeepers (Lipson, 2014). This might involve regular meetings of RAs to discuss their experiences addressing mental health issues within their residential communities.

Summary of Campus-based Help-seeking Interventions

The campus mental health treatment gap has remained wide over the last 20 years, a fact made more troubling in the face of increasing severity of psychopathology among students (Hunt & Eisenberg, 2010). Overall, there is very limited evidence that existing interventions are effective in promoting help-seeking behavior among undergraduates. Despite this, these strategies continue to be implemented on campuses across the country. This ineffectiveness stems in part from limitations of the theoretical models described in the first half of this chapter. The vast majority of campus help-seeking interventions focus on determinants of service utilization as defined by the HBM, SBM, and TPB: access, need, knowledge, attitudes, beliefs, self-efficacy, and intentions.

The bottom line remains that the majority of college students with mental health problems are not utilizing mental health services. There is an urgent need to move beyond and complement current conceptual and empirical approaches to help-seeking in campus mental health research and practice. Doing so requires identifying and understanding the needs and preferences of students with untreated mental health problems. This is the focus of the next chapter.

Figure 1. Traditionally-emphasized Barriers in the Help-seeking Process

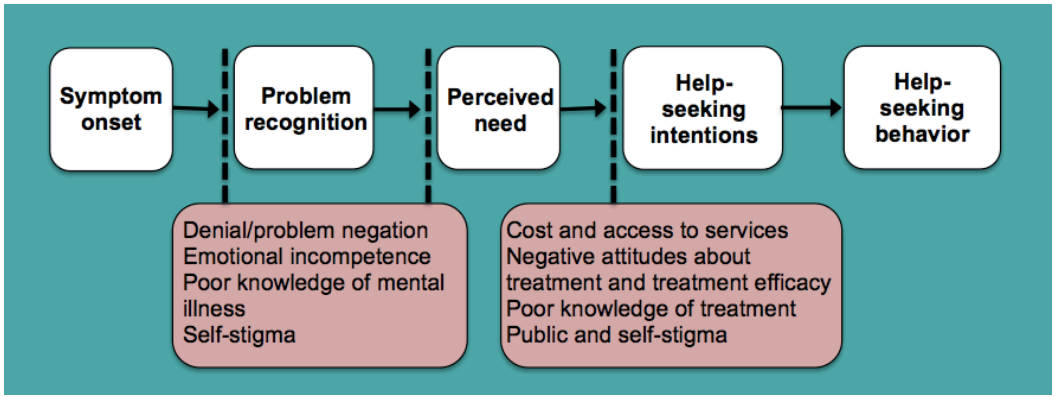

Table 1. Summary of Campus-based Help-seeking Intervention Studies

Study	Type	Study Design	*Measured Help-seeking Behavior?*	Main Findings
Nosse (1993)	S/A	RCT	No	Significant positive treatment effects on attitudes
Tierney (1994)	GKT	Cohort analytic	No	Significant positive treatment effects on skills
Gonzalez et al. (2002)	S/A	RCT	No	Significant positive treatment effects on attitudes
Becker et al. (2004)	S-L	Cohort	Yes	Limited engagement in screening phase; significant positive treatment effects on knowledge about mental health treatment and help-seeking among subset of students who engaged
Pearce et al. (2003)	GKT	Cohort	No	Significant positive treatment effects on objective knowledge, attitudes, self-efficacy, and behavioral intentions
Buckley & Malouff, 2005	S/A	RCT	No	Significant positive treatment effects on attitudes
Han, Chen, Hwang, & Wei (2006)	S/A	RCT	No	Significant positive treatment effects on attitudes
Merritt, Price, Mollison, & Geddes (2007)	S/A	RCT	No	Significant positive treatment effects on knowledge
Ritterfeld & Jin (2006)	S/A	RCT	No	Significant positive treatment effects on knowledge and attitudes
Sharp et al. (2006)	S/A	RCT	Yes	Significant positive treatment effects on attitudes
Wood & Wahl (2006)	S/A	RCT	No	Significant positive treatment effects on knowledge and attitudes
Faigin & Stein (2008)	S/A	Cohort analytic	No	Significant positive treatment effects on attitudes
Haas (2008)	S-L	Cohort	Yes	Limited engagement in screening phase; most students did not seek help
Tompkins & Witt (2009)	GKT	Cohort analytic	No	Significant positive treatment effects on self-perceived and objective knowledge, attitudes, self-efficacy, and behavioral intentions; no effects on behavioral actions
Cross et al. (2010)	GKT	Cohort	No	Significant positive treatment effects on objective knowledge, self-efficacy, and skills
Chung et al. (2011)	S-L	Cohort	Yes	High rates of help-seeking behavior
Indelicato, Mirsu-Paun, & Griffin (2011)	GKT	Cohort	No	Significant positive treatment effects on self-perceived knowledge, attitudes, self-efficacy, and behavioral intentions; no effects on behavioral actions
Klein, Ciotoli, & Chung (2011)	S-L	Cohort	Yes	A small proportion of students sought help
Demyan & Anderson (2012)	S/A	RCT	No	Significant positive treatment effects on attitudes; no effects on help-seeking intentions
Kaplan, Vogel, Gentile, & Wade (2011)	S/A	RCT	No	Significant positive treatment effects on attitudes
Pasco, Wallack, Sartin, & Dayton (2012)	GKT	Cohort analytic	No	Significant positive treatment effects on self-perceived knowledge, self-efficacy, and skills
Schwartz et al. (2012)	S/A	Cohort	Yes	Significant positive treatment effects on help-seeking behavior; no effects on stigma
Czyz et al. (2013)	S-L	RCT	No	Stigma is not a salient barrier to mental health services for at-risk non-help-seekers
Mitchell, Kader, Darrow, Haggerty, &	GKT	Cohort	No	Significant positive treatment effects on self-perceived and objective knowledge, attitudes, self-

Study	Type	Study Design	*Measured Help-seeking Behavior?*	Main Findings
Keating (2013)				efficacy, and behavioral intentions; no effects on behavioral actions
Taub et al. (2013)	GKT	Cohort	No	Significant positive treatment effects for new RAs on objective knowledge and attitudes; no effects for returning RAs
Theriot (2013)	S/A	Cohort analytic	No	Significant positive treatment effects on attitudes
House, Lynch, & Bane (2013)	GKT	Cohort	No	Significant positive treatment effects on self-perceived knowledge, attitudes, and self-efficacy
Cimini et al. (2014)	GKT	Cohort	No	Significant positive treatment effects on self-perceived knowledge and self-efficacy
Lipson et al. (2014)	GKT	RCT	Yes	Significant positive treatment effects on self-perceived knowledge and self-efficacy; no effects for the target population
Reavley et al. (2014)	S/A	RCT	Yes	No treatment effects
Thombs, Gonzalez, Osborn, Rossheim, & Suzuki (2014)	GKT	RCT	No	Significant positive treatment effects on attitudes, self-efficacy, and behavioral actions
King et al. (2015)	S-L	RCT	Yes	Limited engagement in online counseling; significant positive treatment effects on attitudes, help-seeking intentions, and help-seeking behavior

Notes: Studies are categorized as randomized control trials (RCTs), cohort analytic studies (observational studies comparing groups according to whether or not they were exposed to an intervention), or cohort studies (pre/post-test studies without a control condition).

CHAPTER 3: UNDERSTANDING THE CAMPUS MENTAL HEALTH TREATMENT GAP

"I think colleges should pay attention to the fact that many more students need mental health services than who actually access them. Some of the students most affected or most at risk for mental health conditions are the hardest to reach because they are secluded in their rooms."
-Student responder (Gruttadaro & Crudo, 2012, 4)

Chapter Overview

The traditional college years (ages ~18-24) coincide with age of onset for most mental health problems (Kessler et al., 2007). Estimates from scientifically rigorous population-level studies suggest that between 33% and 50% of college students meet diagnostic criteria for a mental illness (Eisenberg, Hunt, & Speer, 2013; Furr, Westefeld, McConnell, & Jenkins, 2001; Osberg, 2004), the vast majority of whom (60-80%) are not receiving treatment (Blanco et al., 2008; Eisenberg et al., 2011a). While professional mental health treatment is not necessarily the most appropriate option in all cases, available evidence suggests that there are millions of college students with clinically significant untreated symptoms who would likely benefit from services.

In this chapter, I examine the campus mental health treatment gap through detailed descriptive analyses. Using primary data from two large-scale, online survey studies—the Healthy Minds Study and the Healthy Bodies Study, I report rates of help-seeking and non-help-seeking overall and variations therein by mental health condition, by treatment modality, and by individual characteristics. I also examine barriers to service utilization, identifying the most commonly reported reasons for non-help-seeking among students with apparent unmet need. Based on these analyses, I argue that

current intervention approaches (as reviewed in chapter 2) are not fully accounting for the attitudes, preferences, and needs of students with untreated mental health problems.

Data

The Healthy Minds Study. The Healthy Minds Study (HMS) is an annual online survey examining mental health and service utilization on college and university campuses (healthymindsnetwork.org/hms). In this chapter, I analyze aggregate data from two waves of HMS (2013 and 2014), which include over 20,000 undergraduates from 30 four-year institutions (*see Participants*). At each institution with more than 4,000 students, we (the study team) recruited a random sample of 4,000 from the full population; on campuses with less than 4,000 students, we recruited all students to participate. Recruitment was conducted by email. To engage non-responders, we sent up to three email reminders over the month-long data collection period. Response rates were as follows: 19.8% in 2013 and 30.8% in 2014. HMS data are ideal for examining help-seeking outcomes given their large-scale, comprehensive nature (the study measures symptoms of all mental health conditions of interest—depression, anxiety, and eating disorders). As such, the results of this chapter are drawn primarily from HMS.

The Healthy Bodies Study. Data from the Healthy Bodies Study (HBS) are used to supplement HMS findings, specifically with regard to understanding help-seeking for eating disorders (the main focus of chapter 4). HBS is administered in much the same way as HMS, the key difference being that HBS survey items concentrate on the prevalence and treatment of eating and body image concerns (healthybodiesstudy.org). Throughout this chapter, I analyze data from two waves of HBS (2014 and 2015), which

include over 6,000 undergraduate responders from 11 institutions.[6] Measures derived from and findings based on HBS data are explicitly noted as such, whereas all other findings should be attributed to HMS.[7] Both studies were approved by the Institutional Review Boards at all participating institutions.[8]

Measures

Mental Health Help-seeking. Throughout this chapter, I examine a set of six binary behavioral and four continuous attitudinal outcomes related to help-seeking for mental health. These are described in detail in the appendix (*see* ***Table A1***). The primary outcome is a binary measure of any past-year mental health treatment utilization based on the following two survey items: "In the past 12 months have you received counseling or therapy for your mental or emotional health from a health professional?" and "In the past 12 months have you taken any of the following types of prescription medications?".[9] Students who reported receiving counseling/therapy and/or taking any prescribed psychotropic medications are considered treatment users. The other five behavioral outcomes are: (1) any past-year counseling/therapy, (2) any past-year medication, (3) any current treatment (counseling/therapy and/or medication), (4) any current counseling/therapy, and (5) any current medication.[10] The four attitudinal outcomes are: (1) perceived need for mental health treatment in the past year; (2)

[6]HBS response rates were as follows: 17.8% in 2014 and 26.9% in 2015.
[7]Results presented in the tables at the end of this chapter are drawn entirely from HMS data.
[8]I am a co-investigator of HMS and a co-principal investigator of HBS. As such, I am involved in all aspects of the research as described here, including survey design, implementation, and data collection.
[9]In HBS, the primary outcome is derived from a slightly different survey item: "Over the last 12 months, have you received counseling or therapy for issues related to eating and/or body image from a health professional?" Though some medications have been shown to be helpful in the treatment of eating disorders, therapy, namely cognitive behavioral therapy, remains the most common and effective treatment modality. When used, medications (particularly antidepressants) are typically prescribed to individuals with bulimia nervosa and those with comorbid anxiety or depression (American Dietetic Association, 2006; Striegel-Moore, Leslie, Petrill, Garvin, & Rosenheck, 2000).
[10]Though an undeniably significant issue in college populations (Eisenberg & Chung, 2012), treatment adherence (the degree to which an individual follows clinical guidelines) is not the focus of this chapter.

subjective knowledge of available mental health services; (3) perceived stigma; and (4) personal stigma.[11] Perceived need and knowledge are measured on a scale from zero ("strongly disagree") to four ("strongly agree"), while perceived and personal stigma are measured on a scale from zero ("strongly disagree") to five ("strongly agree").

Reasons for Help-seeking and Non-help-seeking.[12] To understand what motivates students to seek mental health treatment, I explore the following survey item: "Earlier in this survey you reported that you have taken medication and/or received counseling/therapy in the past 12 months for your mental or emotional health. Which of the following are important reasons why you received those services?" Students were instructed to "select all that apply" from a list of the following response options: (1) "I decided on my own to seek help"; (2) "A friend encouraged/pressured me to seek help"; (3) "A family member encouraged/pressured me to seek help"; (4) "Someone other than a friend or family member encouraged me to seek help"; (5) "I was mandated to seek help by campus staff"; (6) "I acquired more information about my options from [another source]"; and (7) "other".

Using the following survey item, I explore barriers to mental health treatment as endorsed by students with positive screens who had not sought help: "In the past 12 months which of the following explain why you have not received medication or therapy for your mental or emotional health?" Students were instructed to "select all that apply" from a list of 28 response options (*see* ***Table A1***).

[11]The attitudinal measures are also operationalized as key independent variables in models predicting help-seeking behavioral outcomes.
[12]Reasons for help-seeking are often referred to as "approach factors", while reasons for not seeking help are often referred to as "avoidance factors" (Roth & Cohen, 1986).

Mental Health Measures. Throughout this chapter, I report help-seeking outcomes for students who met criteria for one or more of the following seven mental health measures: (1) depression; (2) anxiety; (3) eating disorders; (4) non-suicidal self-injury; (5) suicidal ideation; (6) any mental health problem (one or more of the aforementioned measures); and (7) co-occurring (or "comorbid") mental health problems. These are each described in more detail below.

(1) *Depression*: In HMS, symptoms of depression are measured using the Patient Health Questionnaire-9 (PHQ-9), a validated screening instrument based on the nine core symptoms of a major depressive episode (Kroenke, Spitzer, & Williams, 2001; Kroenke & Spitzer, 2002; Lowe, Unutzer, Callahan, Perkins, & Kroenke, 2004). Across multiple settings and populations, scholars have found the PHQ-9 to be highly correlated with clinical diagnosis (Henkel et al., 2004; Kroenke et al., 2001; Lowe et al., 2004). The PHQ-9 has high internal consistency in college student samples (Cronbach's alpha=0.84) (Eisenberg et al., 2011b), including the sample reported on in this chapter (Cronbach's alpha=0.87). PHQ-9 scores range from zero to 27, with higher scores indicating higher levels of depressive symptoms. Using the instrument's standard algorithm, I present results for two specific, binary measures of depression: a positive screen for any depression ($\geq$10) and a positive screen for major depressive disorder (MDD) ($\geq$15). I also examine help-seeking outcomes across a continuous measure of PHQ-9 scores (0-27).

(2) *Anxiety*: In HMS, symptoms of anxiety are measured using the Generalized Anxiety Disorder 7 (GAD-7) (Spitzer, Kroenke, Williams, & Löwe, 2006). Scores range from zero to 21, with higher scores indicating higher levels of anxiety; a score of greater

than or equal to 10 is considered a positive screen. I also examine help-seeking outcomes across a continuous measure of GAD-7 scores (0-21).

(3) *Eating Disorders*: I use data from both HMS and HBS to measure eating disorders. In HMS, symptoms of eating disorders are assessed using the SCOFF, an empirically-validated, five-item screen (Morgan et al., 1999). Scores range from zero to five, with a score of greater than or equal to two constituting a positive screen. Prior studies have determined this cutoff to be both sensitive (72-100%) and specific (73-94%) for the diagnosis of anorexia and bulimia nervosa (Luck et al., 2002; Morgan et al., 1999). Using the instrument's standard algorithm, I present results for a binary measure of eating disorders ($\geq$2) and a continuous measure of SCOFF scores (0-5). In HBS, eating disorders are measured using the Eating Disorder Examination Questionnaire (EDE-Q) (Fairburn, 2008). A more rigorous measure, the EDE-Q ranges from zero to six, with higher scores indicative of higher symptom levels. Using the standard algorithm, I present results for a binary measure of positive EDE-Q screen ($\geq$4).

(4) *Non-suicidal Self-injury*: In HMS, a single survey item is used to assess non-suicidal self-injury (NSSI): "This question asks about ways you may have hurt yourself on purpose, without intending to kill yourself. In the past four weeks, have you ever done any of the following intentionally?: Cut myself, burned myself, banged my head or other body part, scratched myself, punched myself, pulled my hair, bit myself, interfered with wound healing, other, or no, none of these." Students were instructed to "select all that apply". I examine help-seeking outcomes among students who engaged in any NSSI (a binary measure defined as one or more reported behaviors).

(5) *Suicidal Ideation*: In HMS, the following question is used to measure suicidal ideation: “In the past year, did you ever seriously think about attempting suicide?” I examine help-seeking among students who answered “yes” to this question.

(6) *Any Mental Health Problem*: I examine help-seeking outcomes among students with any mental health problem, defined as the presence of one or more of the above-mentioned problems in HMS data (a positive PHQ-9, GAD-7, and/or SCOFF screen, and/or “yes” response to past-year NSSI and/or suicidal ideation).

(7) *Co-occurring Mental Health Problems*: Finally, I examine help-seeking outcomes among students with co-occurring (or comorbid) mental health problems, defined as the presence of two or more of the above-mentioned problems as reported in HMS data. These students are also included in the sample for each specific mental health measure.

Individual Characteristics. I explore variations in help-seeking across nine individual characteristics: (1) age (dummy variables for 18, 19, 20, 21, 22, and 23+); (2) gender (binary variable of female versus male); (3) sexuality (dummy variables for heterosexual, bisexual, gay/lesbian, and other); (4) race/ethnicity (dummy variables for white, African American, Latino/a, Asian, multi-race/ethnicity, and other); (5) parental education (as a proxy for socioeconomic status) (binary variable of non-first-generation (i.e., one or more parents received at least a bachelor’s degree) versus first-generation student); (6) citizenship (binary variable of U.S. citizen versus international student); (7) religiosity (dummy variables for “very religious”, “fairly religious”, “not too religious”, and “not religious at all”); (8) housing (dummy variables for campus residence hall, fraternity/sorority house, other campus housing, off-campus non-university housing,

parent/guardian's home, and other); and (9) academic discipline (dummy variables for humanities, social sciences, natural sciences, art, business, engineering, medicine, law, nursing, public health, multidisciplinary (students who selected more than one field of study), undecided, and other).

Statistical Analysis

Accounting for Survey Non-response. In both HMS and HBS data, sample probability weights are used to adjust for potential differences between survey responders and non-responders. For students in the initial random samples, the study team obtained administrative data from participating institutions, including gender, race/ethnicity, and GPA. We then constructed response weights, equal to 1 divided by the predicted probability of survey response, using a logistic regression to estimate predicted response probability based on these variables. Thus, weights are larger for responders with underrepresented characteristics, ensuring that all estimates are representative of the full population in terms of basic demographic and other characteristics.

Data Analysis Overview. Survey data are analyzed at the individual level. As noted above, the analyses conducted in this chapter are descriptive in nature, intended to quantify unmet need for mental health services, to examine factors that facilitate and impede treatment utilization, and to elucidate variation in and correlates of help-seeking behaviors and attitudes within a large sample of undergraduate students. The bivariate and multivariate analyses are described in detail below. All analyses were conducted using Stata 12.1 and weighted using the sample probability weights described above.

Bivariate Analyses. First, I calculate bivariate statistics for each of the six behavioral help-seeking outcomes, reporting the overall rate (percentage) of past-year and current utilization among students who met criteria for each of the eight binary mental health measures (*see* ***Table 3***). I also examine rates of past-year treatment across continuous measures of PHQ-9 depression scores, GAD-7 anxiety scores, and SCOFF eating disorder scores (*see* ***Figures 2a/b/c***). I examine variations in past-year and current help-seeking behavior among students with "any mental health problem", stratifying the sample by the individual characteristics described above. I evaluate differences in binary behavioral outcomes across subgroups using Pearson's chi-square tests of independence.

For individual characteristics operationalized as dummy variables, the subgroup comparison is between students with this characteristic (e.g., live in a campus residence hall) and those without (e.g., do not live in a campus residence hall). For individual characteristics operationalized as binary variables (gender, parental education, and citizenship), the subgroup comparison is between the two distinct categories (female versus male, non-first-generation versus first-generation, and U.S. versus international) (*see* ***Table 4***).

Next, I calculate levels of perceived need, knowledge, and stigma by mental health measure and treatment status (e.g., perceived need among treatment users versus non-treatment users with MDD) and then, among students with "any mental health problem", by individual characteristic and treatment status (e.g., personal stigma among female treatment users versus female non-treatment users). From these analyses, I report means and standard errors (SE). SEs are clustered by campus. I use

adjusted Wald tests to evaluate statistically significant differences in mean attitudes by treatment status (*see* ***Tables 6*** *and* ***8***). I also examine reasons for and barriers to help-seeking among treatment users and non-treatment users, respectively. I report rates of endorsement (percentages) for each reason/barrier (*see* ***Figures 3a/b***).

Multivariate Analyses. First, I estimate a multivariate logistic regression model of past-year treatment utilization (*see* ***Table 5***). Next, I estimate separate ordinary least squares (OLS) regressions for each of the four attitudinal outcomes (*see* ***Table 9***). Finally, I examine correlates between help-seeking behaviors (as dependent variables) and attitudes (as independent variables). I estimate a separate logistic regression model for each behavior by each attitude (six behavioral outcomes x four attitudinal measures=24 models) (*see* ***Table 10***). From the multivariate models, I report two-tailed t-tests of the significance of odds ratios (ORs) (for logistic regressions) and coefficients (for OLS) and 95% confidence intervals (CI). All multivariate models are estimated among students with "any mental health problem" and control for the individual characteristics described above. Reference categories are: 19 (for age), female (for gender), heterosexual (for sexuality), white (for race/ethnicity), non-first-generation (for parental education), U.S. (for citizenship), "not at all" (for religiosity), social sciences (for academic discipline), and campus residence hall (for housing). As in the bivariate analyses, SEs are clustered by campus.

Limitations

The results presented in this chapter should be interpreted in the context of four key limitations. First, the surveys had modest response rates: 19.8-30.8% for HMS and 17.8-26.9% for HBS. Though probability weights adjusted for differences between

responders and non-responders using administrative data, there is still potential for response bias along dimensions unmeasured in the full populations. The main concern would be if mental health symptoms and/or treatment utilization vary significantly for responders versus non-responders. At least one prior study found that students who have used mental health services are more likely to respond to surveys (Eisenberg et al., 2007a).[13] If non-responders tend to seek help at even lower rates than responders, this would suggest that the findings presented in this chapter overestimate mental health treatment utilization.

Second, the study sites were not randomly selected. Though diverse across numerous institutional characteristics (*see Participants*), the sample of participating campuses may be unique in their motivation to address student mental health. This would suggest that the treatment gap may be even wider at colleges and universities nationwide.

Third, the measures of mental health are based on brief, self-reported instruments (PHQ-9, GAD-7, SCOFF, and EDE-Q). Although these instruments have been validated and widely used, it is important to note that positive screens are correlated with but not equivalent to clinical diagnoses (i.e., some of the positive screens would not meet diagnostic criteria). That said, treatment of subclinical disorders is of critical significance given the potential to prevent symptom progression and reduce burden of disease (Allart-van Dam, Hosman, Hoogduin, & Schaap, 2003).

[13]The authors note that students with prior treatment experience may be more inclined to participate in this research due to a vested interest in the topic (Eisenberg et al., 2007a).

Finally, the cross-sectional nature of the data/analyses presented in this chapter make it impossible to infer causality. In presenting the results, I note several examples of potential reverse causation.

Participants

The analyses presented in this chapter focus on 21,530 undergraduate students (responders enrolled in bachelor degree programs) at 30 U.S. colleges and universities.[14] Although this is essentially a convenience sample of campuses, the schools are diverse along several dimensions, including geographic location, institutional type, and enrollment size. The schools are located in 15 states. The sample is comprised 18 private and 12 public institutions. Undergraduate enrollments range from less than 1,000 to over 40,000 students (four have less 1,000, eight have 1,000-1,999, three have 2,000-4,999, three have 5,000-9,999, six have 10,000-19,999, and six have over 20,000). Of note, the sample includes seven schools of art and design (N=3,342 students). This is an important consideration given that previous research has revealed a significantly higher prevalence of mental health problems among art school students relative to other disciplines (Lipson, Zhou, Wagner, Beck, & Eisenberg, 2016).

Just over half of students in the sample are female (54.9%), with the vast majority being between the ages of 18 and 22 (87.9%). Most students identify as heterosexual (85.5%). Roughly two-thirds of the sample is white (66.5%) and over 90% are U.S. citizens. Just under half of students live in on-campus residence halls (43.8%) and slightly less than one-third are first-generation (30.2%). The most common academic disciplines are art (23.7%), social sciences (10.5%), natural sciences (9.9%), and engineering (9.7%). Roughly half of students met criteria for “any mental health

[14]The primary analytic sample is drawn from the HMS data.

problem" (48.7%), with 26.0% screening positive for depression, 20.5% for anxiety, and 16.6% for eating disorders. NSSI and suicidal ideation are prevalent as well, at 20.9% and 10.2%, respectively. About one in four students (24.6%) appear to have co-occurring mental health problems (*see* ***Table 2***).

Quantifying the Campus Mental Health Treatment Gap

Overall (see Table 3). Among students with "any mental health problem", just 41.8% received any form of treatment over the past year (31.6% for therapy and 25.3% for medication) and just over one-quarter (25.7%) were currently receiving treatment (13.8% for therapy and 18.3% for medication). Overall, this equates to a past-year treatment gap of 58.2% and a current treatment gap of 74.3%. More than half of students who received mental health services in the past year (55.2%) did so on campus (e.g., through their campus counseling center or health services), making this the most common location for treatment. Though campus mental health services vary depending on institutional and student characteristics, a typical range of clinical services includes: assessment and triage, individual and group therapy, and crisis intervention (Douce & Keeling, 2015).

***By Mental Health Measure* (*see Table 3*).** Across mental health measures, rates of past-year treatment utilization range from 41.2% (among students with positive eating disorder screens on the SCOFF) to 56.7% (among students with suicidal ideation).[15] Rates of current treatment utilization range from 24.7% (among students with positive eating disorder screens on the SCOFF) to 36.0% (among students with MDD).

[15]In HBS, just 21.3% of students with positive screens on the EDE-Q received care for concerns specifically related to an eating disorder.

As shown in **Figure 2a**, rates of past-year treatment generally increase across PHQ-9 depression scores. A similar pattern of service utilization by symptom severity is revealed for both anxiety and SCOFF eating disorder scores (*see **Figures 2b/c***). Though the treatment gap narrows as symptom severity increases, it is important to note that roughly one quarter of students with the highest possible depression scores (22.5%) and over one third of students with the highest possible anxiety (35.3%) and eating disorder (37.7%) scores are still untreated. These are students who, by clinical standards, are very much in need of treatment; for example, the recommended protocol for treating individuals with a PHQ-9 depression score of greater than or equal to 20 is "immediate initiation of pharmacotherapy and, if severe impairment or poor response to therapy, expedited referral to a mental health specialist for psychotherapy and/or collaborative management" (Kroenke & Spitzer, 2002, 2).

***By Individual Characteristics* (*see Tables 4 and 5*).** There are several notable variations in help-seeking behavior across individual characteristics; these are evaluated among students who met criteria for "any mental health problem". Results are presented from bivariate analyses (percentages of the weighted sample) and multivariate analyses (ORs from a logistic regression model controlling for the above-mentioned individual characteristics).[16,17]

Rates of past-year treatment increase significantly with age, from 36.6% among 18-year-olds to 46.4% among students 23 or older. In multivariate analyses, students who are at least 23 years old have 1.7 times higher odds of receiving treatment relative

[16]From the bivariate analyses, I focus on results for past-year treatment. Patterns of treatment utilization across individual characteristics remain similar by treatment modality (therapy versus medication) and for current help-seeking (*see **Table 4***).
[17]In sensitivity analyses with campus fixed effects (dummy variables for each study site), results from the multivariate models presented in **Table 5** remain the same in magnitude and direction.

to 19-year-olds ($p<0.001$). This is consistent with previous research in college populations, which has found that younger students are less likely to receive help (Eisenberg et al., 2011).

Treatment rates also vary by gender: 44.9% among females and 36.0% among males. This difference is more pronounced for therapy (females=35.3%, males=24.8%) than for medication (females=27.2%, males=21.6%). In multivariate analyses, males are significantly less likely to receive treatment relative to females (OR=0.7, $p<0.001$). These findings are consistent with extant research on gender and mental health service utilization (Andrews, Issakidis, & Carter, 2001; Pederson & Vogel, 2007), which sees norms of masculinity and gender role socialization as powerful determinants of help-seeking attitudes and behaviors. Scholars have also found that young men tend to have more negative attitudes towards and be less open to mental health treatment than young women (Chandra & Minkovitz, 2006; Gonzalez, Alegria, & Prihoda, 2005); findings regarding help-seeking attitudes and knowledge by gender are included below.

Heterosexual students received treatment at lower rates (39.1%) than bisexual (53.1%; OR=1.4, $p=0.005$) and gay/lesbian (52.3%; OR=1.6, $p<0.001$) students. There is a growing body of empirical evidence to suggest that, conditional on symptom severity, sexual minorities seek treatment at higher rates than heterosexuals (Cochran, Sullivan, & Mays, 2003; Grella, Cochran, Greenwell, & Mays, 2014; Meyer, Teylan, & Schwartz, 2015; Spengler & Ægisdóttir, 2015). Relatedly, campus-based studies have found that heterosexual students tend to have higher levels of personal stigma (Eisenberg, Downs, Golberstein, & Zivin, 2009b); findings regarding help-seeking attitudes and knowledge by sexuality are included below.

Past-year treatment rates are significantly lower among African American (33.1%; OR=0.6, *p*=0.01), Latino/a (32.4%; OR=0.7, *p*=0.02), and Asian (24.8%; OR=0.5, *p*<0.001) students compared to White students (45.3%). There is particularly wide variation in medication use by race/ethnicity, from under 10% among Asian students to nearly 30% among White students. Underutilization of mental health services by Asian students is well documented in the literature, which points to acculturation, cultural barriers, and stigma as contributing factors (Abe-Kim et al., 2007; Kim & Park, 2009; Lee et al., 2009). In particular, researchers have noted the unique pressures that Asian students face as the "model minority" and how this status is at odds with seeking help for mental health concerns; findings regarding help-seeking attitudes and knowledge by race/ethnicity are included below.

Treatment rates are also significantly lower among first-generation students (39.0%; OR=0.8, *p*=0.002) relative to non-first-generation students (43.3%) and among international students (25.0%; OR=0.6, *p*<0.001) relative to U.S. citizens (42.9%). Less than one in 10 international students (8.7%) used medication, relative to over one quarter of U.S. students (26.4%).

There is an interesting relationship between religiosity and past-year treatment utilization: students who are "very religious" (35.4%; OR=0.8, *p*=0.001) and "fairly religious" (36.5%, OR=0.8, *p*=0.001) have significantly lower rates than students who are "not religious at all" (45.5%).

There are also notable differences in help-seeking across academic disciplines: treatment rates are significantly lower among students in the natural sciences (36.3%;

OR=0.7, *p*=0.007), business (28.3%; OR=0.5, *p*=0.002), and engineering (29.0%; OR=0.5, *p*<0.001) compared to students in the social sciences (47.5%).

Finally, students who live off-campus have higher treatment rates (44.4%) and students living with their parents have lower treatment rates (34.9%) than students living in campus residence halls (40.7%).

Attitudes and Knowledge Related to Help-seeking

***Overall* (*see Table 6*).** Among students with "any mental health problem", levels of perceived need are between 2 ("neither agree nor disagree") and 3 ("agree") (mean=2.6, SE=0.03). Students with treated symptoms (defined as those with "any mental health problem" who received some therapy or medication in the past year) have significantly higher rates of perceived need (mean=3.3, SE=0.02) than students with untreated symptoms (defined as those with "any mental health problem" who did not receive any therapy or medication in the past year) (mean=2.0, SE=0.03).

Among students with "any mental health problem", levels of knowledge of campus mental health services are between 2 ("neither agree nor disagree") and 3 ("agree") (mean=2.8, SE=0.06), with higher levels among those with treated symptoms (mean=3.1, SE=0.06) relative to those with untreated symptoms (mean=2.5, SE=0.07).

When asked whether "most people think less of a person who has received mental health treatment" (the measure of perceived stigma), students with "any mental health problem" average between 2 ("somewhat disagree") and 3 ("somewhat agree") (mean=2.5, SE=0.04). Importantly, there are no significant differences in perceived stigma based on whether students had treated symptoms (mean=2.5, SE=0.04) or untreated symptoms (mean=2.4, SE=0.04).

Overall, rates of personal stigma are very low: when asked to agree or disagree with the statement "I would think less of a person who has received mental health treatment", students with "any mental health problem" average between 0 ("strongly disagree") and 1 ("disagree") (mean=0.8, SE=0.03). While personal stigma is lower among students with treated symptoms (mean=0.6, SE=0.03), rates are low even among those with untreated symptoms (mean=0.9, SE=0.04).

Levels of perceived need, knowledge, and stigma by mental health measure and treatment status reveal similar patterns for each of the seven specific conditions (*see* ***Table 6***).[18] **Table 7** categorizes students with untreated symptoms into eight distinct groups based on their levels of perceived need (yes/no), subjective knowledge (high/low), and personal stigma (high/low).[19] The majority of students (61.2%) have high knowledge and low personal stigma (Groups 7 and 8). What differentiates students in these two groups is whether or not they perceived a need for help, with 37.7% of

[18]In HBS, among students with positive EDE-Q screens, levels of perceived need for eating disorder treatment are between 2 ("neither agree nor disagree") and 3 ("agree") (mean=2.3, SE=0.06). Students with treated symptoms have significantly higher rates of perceived need (mean=3.3, SE=0.09) than students with untreated symptoms (mean=2.0, SE=0.07). Among students with positive screens, levels of knowledge of campus resources for eating disorders are between 1 ("disagree") and 2 ("neither agree nor disagree") (mean=1.6, SE=0.10), with higher levels among those with treated symptoms (mean=2.4, SE=0.21) relative to those with untreated symptoms (mean=1.4, SE=0.09). Additionally, among those with positive EDE-Q screens, rates of self-perceived knowledge about eating disorders are quite high: 85.8% of students with treated symptoms and 67.3% of students with untreated symptoms "strongly agree" or "agree" that they "know the signs and symptoms of an eating disorder". When asked whether "most students" at their school "would think less of a person with an eating disorder" (the HBS measure of perceived stigma), students with positive EDE-Q screens average between 1 ("somewhat true") and 2 ("mostly true") (mean=1.4, SE=0.08). Interestingly, rates of perceived stigma are higher among those with treated symptoms (mean=1.6, SE=0.09) relative to those with untreated symptoms (mean=1.3, SE=0.08). As in HMS, rates of personal stigma are very low: when asked to agree or disagree with the statement "I would think less of a person with an eating disorder", students with positive EDE-Q screens average between 0 ("not true") and 1 ("somewhat true") (mean=0.4, SE=0.04), with no differences among those with treated (mean=0.4, SE=0.09) and untreated symptoms (mean=0.4, SE=0.05).

[19]For "perceived need", "yes" is defined as "strongly agree" or "agree" and "no" is defined as "strongly disagree", "disagree", or "neither agree nor disagree". For "knowledge", "high" is defined as "strongly agree" or "agree" and "no" is defined as "strongly disagree", "disagree", or "neither agree nor disagree". For "Stigma, personal", "high" is defined as "strongly agree", "agree", or "somewhat agree" and "low" is defined as "strongly disagree", "disagree", or "somewhat disagree".

students with untreated symptoms categorized into Group 8 (no perceived need) and 23.5% into Group 7 (perceived need). Just 3.1% of students with untreated symptoms fall into Group 2: no perceived need, low knowledge, and high personal stigma. In practice, efforts to address the attitudes and knowledge of students in Group 2 are vastly disproportional relative to this group's representation within overall college populations.

As independent variables in logistic regression models, perceived need, subjective knowledge, perceived stigma, and personal stigma are each significant predictors of help-seeking behavior among students with "any mental health problem" (*see* ***Table 10***). Perceived need has the strongest association with past-year treatment utilization (OR=2.5, $p<0.001$), followed by knowledge (OR=1.6, $p<0.001$), perceived stigma (OR=1.1, $p<0.001$), and personal stigma (OR=0.8, $p<0.001$).[20,21] An alternative way of comparing the strength of relationships between attitudes and help-seeking behavior is through marginal effects (dy/dx), which represent the difference in the probability of the outcome (in this case, any past-year treatment) when the independent variable of interest (in this case, binary operationalizations of each attitude) changes from 0 to 1 and all other covariates are held at the sample mean. In these analyses, perceived need has the strongest marginal effect (dy/dx=0.4, $p<0.001$), followed by knowledge (dy/dx=0.2, $p<0.001$), personal stigma (dy/dx=-0.1, $p<0.001$), and perceived stigma (dy/dx=0.04, $p=0.008$).

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[20]Results remain similar by treatment modality (therapy versus medication) and for current help-seeking (*see* ***Table 10***).

[21]In sensitivity analyses with campus fixed effects (dummy variables for each study site), results from the multivariate models presented in **Table 10** remain the same in magnitude and direction. Results also remain the same when the key independent variables (perceived need, knowledge, perceived stigma, personal stigma) are operationalized as ordinal measures.

It is important to note that HMS data are cross-sectional, meaning that causality may run in both directions. It is possible that the attitudes and knowledge about service use preceded help-seeking behavior (e.g., that students with higher levels of knowledge were more likely to seek help or students with higher levels of personal stigma were less likely to seek help). Reverse causation is equally possible; the attitudes of interest may have been affected by previous help-seeking behavior (e.g., knowledge increased or stigma decreased as a result of students seeking help).

By Individual Characteristics (see Table 9).[22] There are several notable variations in attitudes and knowledge across individual characteristics; these are evaluated among students meeting criteria for "any mental health problem". Results are presented from four separate OLS regressions (one for each of the attitudinal outcomes), controlling for the previously described individual characteristics. On average, being younger (age 18) is associated with lower rates of perceived need (β=-0.1, p=0.03) and knowledge (β=-0.2, p=0.009). Being male is also associated with lower rates of perceived need (β=-0.4, p<0.001) and knowledge (β=-0.5, p<0.001), as well as higher rates of perceived (β=0.1, p=0.002) and personal (β=0.3, p<0.001) stigma. Identifying as gay/lesbian is associated with higher rates of perceived need (β=0.5, p<0.001) and lower rates of personal stigma (β=-0.3, p<0.001). There are few notable differences in attitudes and knowledge across race/ethnicity with one exception: being Asian is associated with significantly lower rates of perceived need (β=-0.3, p<0.001) and knowledge (β=-0.2, p=0.02), and higher rates of personal stigma (β=0.5, p<0.001).

[22]In sensitivity analyses with campus fixed effects (dummy variables for each study site), results from the multivariate models presented in **Table 9** remain the same in magnitude and direction. Results also remain the same when perceived need, knowledge, perceived stigma, and personal stigma are operationalized as ordinal outcomes.

International student status is associated with higher rates of perceived (β=0.3, p=0.001) and personal (β=0.6, p<0.001) stigma. In terms of academic disciplines, studying business is associated with lower rates of perceived need (β=-0.4, p=0.002) and higher rates of personal stigma (β=0.5, p<0.001) relative to the social sciences. Similarly, majoring in engineering is associated with lower rates of perceived need (β=-0.3, p=0.004) and higher rates of personal stigma (β=0.2, p=0.005). Finally, living off-campus is associated with significantly lower rates of knowledge (β=-0.3, p=0.001); the same is true for living with parents/guardians (β=-0.5, p<0.001) and in other housing (β=-0.6, p=0.005).

Additional Attitudes. As described in chapter 2, theories of help-seeking emphasize the importance of individual intentions with regard to future behaviors. In HMS, students were asked the following: "If you were experiencing serious emotional distress, whom would you talk to about this?"[23] Over one-quarter of students with untreated symptoms (25.5%) indicated that they would speak with a mental health clinician. This is further evidence of two important attitudes among undergraduates with untreated symptoms: (1) openness to professional treatment and (2) lack of perceived need (i.e., these students may not consider themselves to be in "serious emotional distress"). Another important attitudinal factor is perceived efficacy of treatment. Regardless of their experience with services, students endorsed positive perceptions of mental health therapy: 70.4% of those with treated symptoms and 62.9% of those with untreated symptoms believed that therapy is "very helpful" or "quite helpful". When

[23]Students are instructed to "select all that apply" from a list of nine options: (1) professional clinician, (2) roommate, (3) friend, (4) significant other, (5) family member, (6) religious counselor, (7) support group, (8) other non-clinical source, and (9) no one. Given the focus on formal mental health treatment utilization, results presented here focus only on intentions to seek help from a professional clinician.

asked what they had heard from other students about the quality of mental health services on their campus, 30.5% of students with treated symptoms and 21.1% of students with untreated symptoms indicated having “heard mostly positive opinions”. Just 8.5% of students with treated symptoms and 5.9% of students with untreated symptoms had “heard mostly negative opinions”. Interestingly, more than half (59.5%) of students with untreated symptoms reported they “haven’t heard anything” (compared to 41.0% of students with treated symptoms). Relatedly, when asked how many of their close friends or family members had ever sought professional help for a mental health problem, nearly one-quarter (22.3%) of students with untreated symptoms answered “none” or “I don’t know” (compared to 11.1% of students with treated symptoms). As described above, these relationships could be bi-directional (e.g., higher perceived efficacy could lead to treatment or treatment could lead to higher perceived efficacy).

Reasons for Help-seeking and Non-help-seeking

***Reasons for Help-seeking* (*see Figure 3a*).** Students who received mental health services in the past year most commonly reported seeking help for the following reasons: “I decided on my own” (69.3%), “A family member encouraged/pressured me” (40.4%), and “A friend encouraged/pressured me” (24.3%). In other words, the majority of students who sought treatment did so on their own accord. Just 3.2% were mandated to seek help.

Barriers to Help-seeking. In HMS, students with untreated symptoms most commonly reported not seeking help for the following five reasons: “I prefer to deal with issues on my own” (61.6%), “Stress is normal in college” (51.9%), “I question how serious my needs are” (47.1%), “I don’t have time” (44.1%), and “I have not had any

need" (41.7%) (*see* ***Figure 3b***). There is little variation in mean attitudes and knowledge among undergraduates with untreated symptoms who endorsed the five most common barriers (*see* ***Table 11***). The one exception is for perceived need, which is much lower among students who reported having "no need" (mean=1.3, SE=0.03) relative to students who reported each of the other four most common barriers, including, interestingly, students who questioned the severity of need (mean=2.3, SE=0.03). Traditionally-emphasized barriers (as reviewed in chapter 2) were less commonly selected as reasons for not seeking help: "financial reasons" (25.5%) and "I worry what others will think" (a measure of stigma) (22.6%) (*see* ***Figure 3b***).

Similarly, in HBS, students with untreated symptoms most commonly reported not seeking eating disorder treatment for the following reasons: "I prefer to deal with issues on my own" (23.4%), "I'm not sure how serious my needs are" (19.4%), and "I don't have time" (14.0%).[24] Consistent with the previously reported low rates of stigma in the sample, few students (9.6%) indicated not seeking help because they "worry about what others will think". Relatedly, students with positive EDE-Q screens also appear open to peer support: 71.8% with treated symptoms and 60.6% with untreated symptoms agreed that "if one of my close friends approached me concerned that I may have an eating disorder, I would be open to talking with this friend".

Summary of the Campus Mental Health Treatment Gap

As a setting, college campuses provide a unique opportunity to "chart a trajectory toward lifelong wellness, adjustment, and success" (Conley, Travers, & Bryant, 2013, 75-76). Unfortunately, this opportunity is not being fully realized. The vast majority of

[24]In HBS, students are instructed to "select up to 3 reasons that are most important" in explaining why they have not received treatment, whereas in HMS, students are instructed to "select all that apply" (*see* ***Table A1***). This may account for the lower rates of endorsement for barriers in HBS relative to HMS.

students with mental illnesses are not receiving appropriate services (Blanco et al., 2008; Eisenberg et al., 2011; Garlow et al., 2008). In this study's large and diverse sample, mental health problems are highly prevalent: 48.7% of undergraduates met criteria for "any mental health problem". Less than half of these students (41.8%) received any form of mental health treatment in the past year (a treatment gap of nearly 60%). Rates of help-seeking are low even among students with the most severe symptoms, including MDD (54.4%), suicidal ideation (56.7%), and co-occurring conditions (48.5%). The mental health treatment gap is significantly wider among certain subgroups, including students who are: younger, male, heterosexual, racial and ethnic minorities, first-generation, international, religious, and in certain academic disciplines. These variations in service utilization are consistent with findings from other campus-based studies (Drum, Brownson, Burton Denmark, & Smith, 2009; Kearney, Draper, & Barón, 2005; Masuda et al., 2009; Mitchell, Greenwood, & Guglielmi, 2007; Yakushko, Davidson, & Sanford-Martens, 2008).

Overall, the majority of students with untreated symptoms have high subjective knowledge of and positive attitudes towards mental health and help-seeking, suggesting that these students "do not have deep-rooted attitudes preventing them from receiving treatment" (Eisenberg et al., 2012a, 226). Personal stigma is very low: on average, students with untreated symptoms disagreed with the statement "I would think less of a person who has received mental health treatment". At a population level, rates of personal stigma are so low that its potential explanatory power is small relative to the extremely wide treatment gap. That said, personal stigma remains high in certain subgroups, including males, Asian students, international students, and students in

business and engineering. Rates of perceived stigma, which are higher than personal stigma, do not differ based on whether students have treated or untreated symptoms. Similarly, other studies have found that perceived stigma is not associated with mental health treatment utilization (Golberstein, Eisenberg, & Gollust, 2008; Golberstein, Eisenberg, & Gollust, 2009). This suggests that "perceived stigma may not be as important a barrier to mental health care as the mental health policy discourse currently assumes" (Golberstein et al., 2008, 392).

Perceived need appears to have the strongest association with help-seeking of the attitude and knowledge measures explored in this chapter. Many students with untreated symptoms have low rates of perceived need; this is true even for those with severe and co-occurring symptoms. Relatedly, when asked why they had not sought help, students with untreated mental health problems most commonly cited reasons that imply a lack of urgency: "I prefer to deal with issues on my own" (61.6%), "Stress is normal in college" (51.9%), "I question how serious my needs are" (47.1%), "I don't have time" (44.1%), and "I haven't had a need" (41.7%). These reasons, which are consistent with findings from other studies (Eisenberg et al., 2007a; Yorgason, Linville, & Zitzman, 2008), do not suggest negative attitudes, beliefs, or lack of knowledge as primary deterrents to mental health care. Despite this, the conceptual models, with their emphasis on these factors, continue to inform help-seeking intervention development and dissemination on college and university campuses nationwide. Available evidence indicates that "traditionally emphasized barriers, such as knowledge and stigma, are clearly not the entire story" (Eisenberg et al., 2012a, 226). Current conceptualizations are insufficient for understanding students' non-help-seeking (Biddle et al., 2007).

In response to this, chapter 4 introduces and evaluates a new approach for narrowing the campus mental health treatment gap. The approach is based on concepts from behavioral economics and social psychology and is applied in a large-scale intervention designed to promote help-seeking among undergraduates with untreated symptoms of eating disorders.

Table 2. Sample Characteristics (N=21,530)

	%		%
Age		Academic discipline	
18	12.08	Humanities	3.96
19	21.08	Social sciences	10.51
20	21.06	Natural sciences	9.89
21	20.98	Art	23.71
22	12.65	Business	6.36
23+	12.15	Engineering	9.73
Gender		Medicine	1.35
Female	54.89	Law	0.32
Male	45.11	Nursing	1.38
Sexuality		Public health	0.62
Heterosexual	85.46	Multidisciplinary	20.40
Bisexual	4.95	Undecided	1.06
Gay/lesbian	4.86	Other	10.51
Other	4.73	Housing	
Race/ethnicity		Campus residence hall	43.75
White	66.53	Fraternity/sorority	2.48
African American	3.91	Other campus housing	4.59
Latino/a	5.93	Off-campus housing	40.15
Asian	10.88	Parent/guardian's home	8.28
Multi-race/ethnicity	8.22	Other	0.75
Other	4.53	Mental health	
Parental education		Any mental health problem	48.65
Non-first-generation	69.81	Any depression	25.96
First-generation	30.19	MDD	11.03
Citizenship		Anxiety	20.46
U.S.	93.80	Eating disorders	16.64
International	6.20	NSSI	20.93
Religiosity		Suicidal ideation	10.22
Very	9.14	Co-occurring	24.62
Fairly	26.08		
Not too	28.64		
Not at all	36.15		

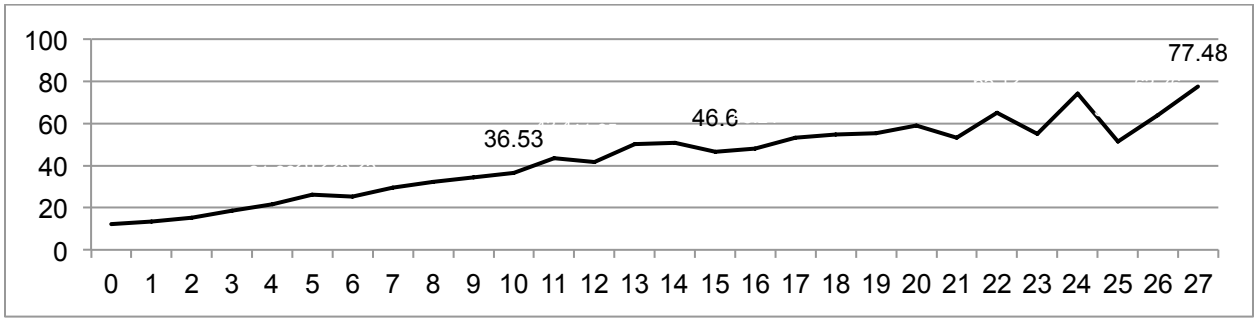
Notes: Table values are percentages of the weighted sample.

Table 3. Past-year and Current Therapy and Medication by Mental Health Measure

	Past-year			Current		
	Tx	Therapy	Medication	Tx	Therapy	Medication
Any mental health problem	41.83	31.57	25.28	25.66	13.78	18.30
Any depression	48.06	35.97	30.55	30.90	17.08	22.22
MDD	54.36	41.57	36.13	35.98	20.46	26.47
Anxiety	49.25	36.99	30.97	31.89	18.17	22.43
Eating disorders	41.20	30.87	26.06	24.72	13.13	18.23
NSSI	46.66	36.94	28.23	28.67	16.45	20.27
Suicidal ideation	56.67	46.50	37.76	35.96	20.75	27.02
Co-occurring	48.47	37.50	29.58	30.91	17.43	21.69

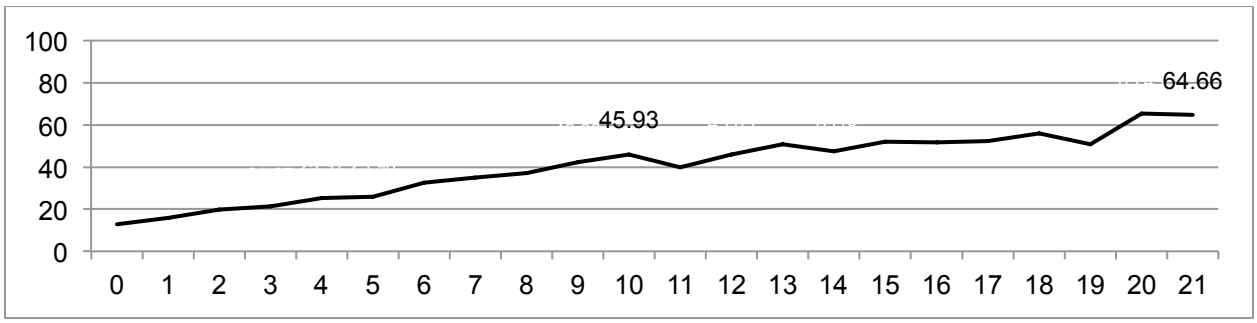
Notes: Table values are percentages of the weighted sample among students meeting criteria for each of the eight mental health conditions listed. “Tx” is any therapy and/or medication.

Figure 2a. Past-year Treatment by PHQ-9 Depression Score



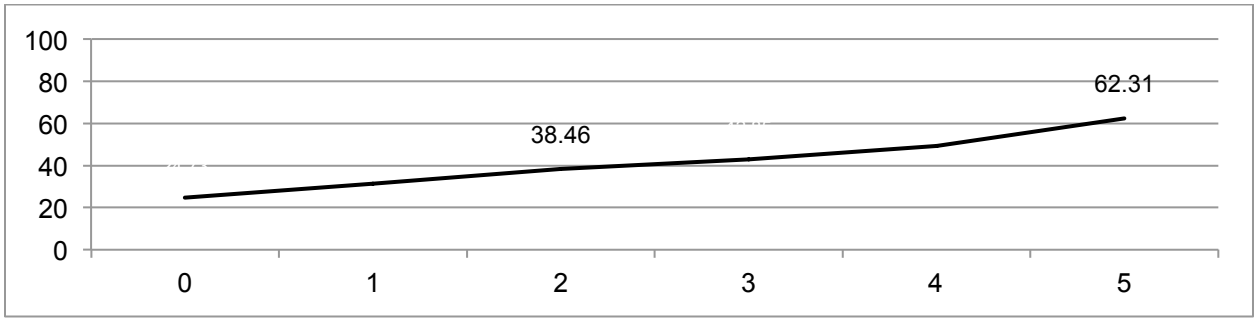
Notes: Figure values are percentages of the weighted sample among students with each PHQ-9 score (range: 0-27). The outcome is any past-year mental health treatment (therapy and/or medication).

Figure 2b. Past-year Treatment by GAD-7 Anxiety Score



Notes: Figure values are percentages of the weighted sample among students with each GAD-7 score (range: 0-21). The outcome is any past-year mental health treatment (therapy and/or medication).

Figure 2c. Past-year Treatment by SCOFF Eating Disorder Score



Notes: Figure values are percentages of the weighted sample among students with each SCOFF score (range: 0-5). The outcome is any past-year mental health treatment (therapy and/or medication).

Table 4. Variations by Individual Characteristics in Past-year and Current Therapy and Medication among Undergraduates with "Any Mental Health Problem"

	Past-year			Current		
	Tx	Therapy	Medication	Tx	Therapy	Medication
Age						
18	36.60**	29.46	20.65**	23.28	12.88	15.48
19	39.05*	30.72	22.18*	21.28**	10.62***	15.34**
20	42.61	31.69	24.15	25.03	13.74	17.41
21	43.40	33.14	26.56	27.06	14.36	19.37
22	43.18	30.96	28.07*	26.90	14.19	20.08
23+	46.43*	33.08	32.14**	32.91***	18.74***	24.06**
Gender						
Female	44.91***	35.27***	27.19***	27.75***	15.48***	20.08***
Male	35.99	24.79	21.58	21.59	10.36	14.90
Sexuality						
Heterosexual	39.06***	28.65***	24.15**	23.73***	12.09***	17.49*
Bisexual	53.08***	43.95***	32.60**	32.48**	17.80**	23.46*
Gay/lesbian	52.31***	42.31***	29.04	34.55**	23.62***	19.33
Other	49.96**	40.73***	26.30	30.83*	18.99**	20.60
Race/ethnicity						
White	45.30***	33.56**	29.46***	28.92***	14.70**	21.59***
African American	33.14*	28.59	13.47***	22.86	16.87	11.58**
Latino/a	32.43**	26.03	14.13***	15.49***	11.77	7.92***
Asian	24.77***	21.08***	9.53***	11.14***	7.97***	6.07***
Multi-race/ethnicity	46.11	36.10	26.76	27.51	15.15	19.07
Other	42.14	29.49	22.42	24.47	12.38	16.80
Parental education						
Non-first-generation	43.31*	32.61*	26.36	26.66	14.12	19.56**
First-generation	38.99	29.65	23.24	23.91	13.27	15.84
Citizenship						
U.S.	42.93***	32.30***	26.36***	26.56***	14.14**	19.08***
International	24.96	20.88	8.67	11.81	8.53	6.24
Religiosity						
Very	35.43***	25.80**	19.69*	23.33	12.99	15.98
Fairly	36.48***	26.77***	20.70***	21.55***	11.36***	15.09***
Not too	42.73	33.15	25.33	25.89	14.06	18.06
Not at all	45.50***	34.32**	29.03***	28.39***	15.17*	20.84***
Academic discipline						
Humanities	43.92	33.57	27.34	28.99	14.50	23.12*
Social sciences	47.48*	36.49	28.41	26.43	13.45	19.34
Natural sciences	36.30*	27.09*	22.39	22.22	11.59	17.04
Art	47.03*	35.54	29.36**	29.40	16.22	20.58
Business	28.28***	17.99***	16.68**	17.55**	8.14*	11.67**
Engineering	28.97***	21.19***	16.15***	16.93***	9.46**	11.84***
Medicine	29.08**	17.41**	18.07	18.41	10.35	11.96
Law	38.48	38.48	14.68	14.68	9.49	14.68
Nursing	42.51	34.06	23.82	19.32*	9.40	10.30***
Public health	37.80	29.02	19.52	26.41	13.29	15.59
Multidisciplinary	42.08	32.32	25.60	26.56	14.75	19.30
Undecided	48.82	35.73	29.17	32.10	17.40	22.02
Other	41.65	32.09	23.28	25.37	13.22	17.28
Housing						
Campus residence hall	40.70	32.89	22.64**	24.22	12.89	17.17
Fraternity/sorority	42.52	28.49	28.33	22.71	12.00	18.23
Other campus housing	42.03	35.07	25.34	28.45	13.76	20.97
Off-campus housing	44.40**	31.47	28.56***	27.29*	14.57	19.53
Parent/guardian's home	34.92	24.98	21.69	23.97	14.69	16.47
Other	45.20	30.94	29.23	30.41	15.61	21.57

Notes: *p<0.05; **p<0.01; ***p<0.001. Table values are percentages of the weighted sample. Statistical significance is for chi-square tests of differences across subgroups. For binary variables (gender, parental education, and citizenship), significance between the two categories (female versus male, non-first-generation versus first-generation, and U.S. versus international) is indicated after the first category (female, non-first-generation, and U.S.). "Tx" is any therapy and/or medication.

Table 5. Multivariate Correlates of Past-year Treatment among Undergraduates with "Any Mental Health Problem"

	OR	95% CI
Age		
18	0.94	0.80, 1.16
19	Ref	---
20	1.23*	1.05, 1.45
21	1.30*	1.05, 1.60
22	1.36*	1.02, 1.82
23+	1.67***	1.34, 2.09
Gender		
Female	Ref	---
Male	0.68***	0.59, 0.80
Sexuality		
Heterosexual	Ref	---
Bisexual	1.42**	1.12, 1.79
Gay/lesbian	1.63***	1.29, 2.05
Other	1.30*	1.05, 1.62
Race/ethnicity		
White	Ref	---
African American	0.63*	0.45, 0.90
Latino/a	0.66*	0.47, 0.92
Asian	0.49***	0.40, 0.60
Multi-race/ethnicity	1.01	0.83, 1.24
Other	0.90	0.70, 1.17
Parental education		
Non-first-generation	Ref	---
First-generation	0.82**	0.73, 0.92
Citizenship		
U.S.	Ref	---
International	0.63***	0.48, 0.82
Religiosity		
Very	0.76**	0.66, 0.88
Fairly	0.78**	0.69, 0.89
Not too	0.97	0.82, 1.15
Not at all	Ref	---
Academic discipline		
Humanities	0.78	0.51, 1.19
Social sciences	Ref	---
Natural sciences	0.66**	0.49, 0.89
Art	0.90	0.68, 1.20
Business	0.53**	0.36, 0.77
Engineering	0.53***	0.40, 0.70
Medicine	0.50*	0.29, 0.85
Law	0.88	0.31, 2.53
Nursing	0.90	0.62, 1.30
Public health	0.71	0.35, 1.43
Multidisciplinary	0.78*	0.62, 0.98
Undecided	1.43	0.81, 2.54
Other	0.78	0.58, 1.04
Housing		
Campus residence hall	Ref	---
Fraternity/sorority	1.08	0.72, 1.62
Other campus housing	0.95	0.74, 1.23
Off-campus housing	0.95	0.80, 1.11
Parent/guardian's home	0.78	0.57, 1.06
Other	0.99	0.58, 1.66

Notes: *$p<0.05$; **$p<0.01$; ***$p<0.001$. The logistic regression model controls for age, gender, sexuality, race/ethnicity, parental education, citizenship, religiosity, academic discipline, and housing with two-tailed t-tests of the significance of odds ratios (ORs) and 95% CI (confidence intervals) reported in the table. Reference categories ("Ref") are: age 19, female, heterosexual, white, non-first-generation, U.S. citizen, "not religious at all", social sciences, and campus residence hall. The outcome is any past-year treatment (therapy and/or medication).

Table 6. Mean Attitudes and Knowledge by Mental Health Measure and by Past-year Treatment Status

	Perceived need		Knowledge		Stigma, perceived		Stigma, personal	
	Tx	No Tx	Tx	No Tx	Tx	No Tx	Tx	No Tx
Any mental health problem	3.32***	2.01	3.12***	2.53	2.49*	2.42	0.57***	0.87
	(0.02)	(0.03)	(0.06)	(0.07)	(0.04)	(0.04)	(0.03)	(0.04)
Any depression	3.41***	2.30	3.05***	2.41	2.61	2.55	0.58***	0.88
	(0.02)	(0.04)	(0.08)	(0.08)	(0.05)	(0.04)	(0.03)	(0.05)
MDD	3.56***	2.69	2.93***	2.26	2.80*	2.67	0.64**	0.87
	(0.02)	(0.05)	(0.09)	(0.08)	(0.06)	(0.06)	(0.04)	(0.06)
Anxiety	3.45***	2.41	3.04***	2.38	2.61	2.56	0.58***	0.83
	(0.03)	(0.05)	(0.07)	(0.09)	(0.05)	(0.05)	(0.03)	(0.05)
Eating disorders	3.34***	2.01	3.03***	2.49	2.58*	2.46	0.64***	0.96
	(0.03)	(0.05)	(0.08)	(0.08)	(0.04)	(0.06)	(0.03)	(0.05)
NSSI	3.40***	2.09	3.12***	2.54	2.57**	2.45	0.54***	0.81
	(0.03)	(0.04)	(0.06)	(0.08)	(0.05)	(0.04)	(0.04)	(0.04)
Suicidal ideation	3.58***	2.58	3.07***	2.39	2.82***	2.53	0.61**	0.81
	(0.03)	(0.05)	(0.07)	(0.10)	(0.07)	(0.06)	(0.03)	(0.05)
Co-occurring	3.44***	2.37	3.11***	2.43	2.55	2.54	0.58***	0.85
	(0.02)	(0.04)	(0.06)	(0.08)	(0.04)	(0.05)	(0.02)	(0.05)

Notes: *p<0.05; **p<0.01; ***p<0.001. Standard errors (SE) are clustered by campus and listed in parentheses. “Perceived need” and “knowledge” range from 0 (“strongly disagree”) to 4 (“strongly agree”). “Stigma, perceived” and “stigma, personal” range from 0 (“strongly disagree”) to 5 (“strongly agree”). “Tx” is any past-year therapy and/or medication.

Table 7. Attitudes and Knowledge among Undergraduates with Untreated Symptoms

	Perceived need	Knowledge	Stigma, personal
Group 1 (1.74%)	Yes	Low	High
Group 2 (3.09%)	No	Low	High
Group 3 (1.86%)	Yes	High	High
Group 4 (3.68%)	No	High	High
Group 5 (15.23%)	Yes	Low	Low
Group 6 (18.21%)	No	Low	Low
Group 7 (23.48%)	Yes	High	Low
Group 8 (37.73%)	No	High	Low

Notes: For “perceived need”, “yes” is defined as “strongly agree” or “agree” and “no” is defined as “strongly disagree”, “disagree”, or “neither agree nor disagree”. For “knowledge”, “high” is defined as “strongly agree” or “agree” and “no” is defined as “strongly disagree”, “disagree”, or “neither agree nor disagree”. For “stigma, personal”, “high” is defined as “strongly agree”, “agree”, or “somewhat agree” and “low” is defined as “strongly disagree”, “disagree”, or “somewhat disagree”.

Table 8. Mean Attitudes and Knowledge by Individual Characteristics and Past-year Treatment Status among Undergraduates with "Any Mental Health Problem"

	Perceived need		Knowledge		Stigma, perceived		Stigma, personal	
	Tx	No Tx	Tx	No Tx	Tx	No Tx	Tx	No Tx
Age								
18	3.26***	1.86	2.97***	2.47	2.59	2.37	0.48***	0.81
	(0.05)	(0.05)	(0.05)	(0.09)	(0.08)	(0.08)	(0.05)	(0.06)
19	3.35***	1.99	3.12***	2.55	2.47	2.44	0.52***	0.85
	(0.04)	(0.05)	(0.08)	(0.07)	(0.09)	(0.06)	(0.05)	(0.05)
20	3.32***	2.02	3.22***	2.60	2.45	2.37	0.55***	0.82
	(0.05)	(0.04)	(0.06)	(0.07)	(0.05)	(0.07)	(0.03)	(0.04)
21	3.40***	2.04	3.17***	2.59	2.39	2.41	0.59***	0.90
	(0.05)	(0.05)	(0.08)	(0.08)	(0.07)	(0.05)	(0.05)	(0.05)
22	3.29***	2.19	3.11***	2.56	2.53	2.36	0.58***	0.93
	(0.07)	(0.03)	(0.13)	(0.10)	(0.09)	(0.08)	(0.04)	(0.06)
23+	3.25***	1.97	3.00***	2.33	2.64	2.58	0.75**	0.98
	(0.07)	(0.08)	(0.10)	(0.11)	(0.09)	(0.10)	(0.08)	(0.07)
Gender								
Female	3.42***	2.14	3.16***	2.57	2.44*	2.33	0.50***	0.76
	(0.02)	(0.03)	(0.07)	(0.07)	(0.05)	(0.05)	(0.02)	(0.04)
Male	3.11***	1.81	3.04***	2.48	2.58	2.54	0.73***	1.04
	(0.04)	(0.04)	(0.06)	(0.07)	(0.06)	(0.05)	(0.05)	(0.04)
Sexuality								
Heterosexual	3.29***	1.93	3.13***	2.52	2.45	2.42	0.62***	0.92
	(0.02)	(0.02)	(0.07)	(0.06)	(0.04)	(0.04)	(0.03)	(0.03)
Bisexual	3.35***	2.47	3.08***	2.58	2.49	2.41	0.47*	0.65
	(0.07)	(0.11)	(0.07)	(0.12)	(0.09)	(0.14)	(0.06)	(0.06)
Gay/lesbian	3.47***	2.34	3.07*	2.71	2.69*	2.39	0.47	0.61
	(0.06)	(0.13)	(0.14)	(0.13)	(0.08)	(0.09)	(0.05)	(0.08)
Other	3.47***	2.35	3.10***	2.48	2.65	2.41	0.43*	0.66
	(0.05)	(0.09)	(0.09)	(0.13)	(0.11)	(0.12)	(0.07)	(0.07)
Race/ethnicity								
White	3.34***	2.03	3.13***	2.53	2.44*	2.36	0.52***	0.78
	(0.03)	(0.03)	(0.06)	(0.08)	(0.04)	(0.04)	(0.03)	(0.04)
African American	3.20***	2.05	3.22	2.84	2.71	2.72	0.81	1.01
	(0.12)	(0.19)	(0.14)	(0.16)	(0.17)	(0.13)	(0.14)	(0.11)
Latino/a	3.43***	2.02	3.18***	2.58	2.54	2.61	0.62**	0.85
	(0.09)	(0.08)	(0.12)	(0.06)	(0.14)	(0.11)	(0.08)	(0.06)
Asian	3.21***	1.87	3.12***	2.44	2.75	2.54	1.06**	1.41
	(0.09)	(0.06)	(0.08)	(0.05)	(0.12)	(0.08)	(0.10)	(0.08)
Multi-race/ethnicity	3.29***	2.08	3.03**	2.63	2.52	2.33	0.54*	0.72
	(0.05)	(0.10)	(0.11)	(0.13)	(0.10)	(0.12)	(0.06)	(0.06)
Other	3.28***	1.95	3.03***	2.44	2.64	2.43	0.69	0.74
	(0.10)	(0.12)	(0.13)	(0.10)	(0.12)	(0.11)	(0.08)	(0.10)
Parental education								
Non-first-generation	3.32***	1.97	3.12***	2.57	2.45	2.36	0.57***	0.88
	(0.03)	(0.03)	(0.05)	(0.06)	(0.04)	(0.05)	(0.03)	(0.04)
First-generation	3.33***	2.10	3.12***	2.46	2.60*	2.53	0.58***	0.87
	(0.04)	(0.05)	(0.09)	(0.08)	(0.06)	(0.05)	(0.04)	(0.05)
Citizenship								
U.S.	3.32***	2.02	3.12***	2.53	2.48**	2.39	0.55***	0.79
	(0.02)	(0.03)	(0.06)	(0.07)	(0.04)	(0.04)	(0.02)	(0.04)
International	3.35***	1.83	3.15***	2.53	2.87	2.71	1.10***	1.79
	(0.08)	(0.08)	(0.11)	(0.08)	(0.15)	(0.06)	(0.18)	(0.09)
Religiosity								
Very	3.32***	1.87	3.30***	2.51	2.55	2.46	0.60**	0.90
	(0.10)	(0.09)	(0.10)	(0.10)	(0.11)	(0.08)	(0.08)	(0.06)
Fairly	3.35***	1.96	3.23***	2.60	2.47	2.50	0.72**	0.94
	(0.05)	(0.05)	(0.08)	(0.06)	(0.07)	(0.05)	(0.06)	(0.03)
Not too	3.28***	2.09	3.14***	2.54	2.39	2.46	0.59***	0.89

	Perceived need		Knowledge		Stigma, perceived		Stigma, personal	
	Tx	No Tx	Tx	No Tx	Tx	No Tx	Tx	No Tx
	(0.04)	(0.04)	(0.07)	(0.07)	(0.06)	(0.05)	(0.04)	(0.05)
Not at all	3.34***	2.01	3.02***	2.49	2.56***	2.32	0.49***	0.81
	(0.04)	(0.04)	(0.07)	(0.09)	(0.05)	(0.06)	(0.03)	(0.04)
Academic discipline								
Humanities	3.46***	2.07	3.11***	2.45	2.62	2.40	0.54	0.75
	(0.07)	(0.15)	(0.09)	(0.11)	(0.10)	(0.12)	(0.09)	(0.11)
Social sciences	3.43***	2.02	3.24***	2.61	2.63	2.48	0.56**	0.81
	(0.04)	(0.04)	(0.06)	(0.09)	(0.10)	(0.07)	(0.05)	(0.05)
Natural sciences	3.26***	1.88	3.00***	2.50	2.50	2.47	0.66**	0.96
	(0.06)	(0.08)	(0.09)	(0.08)	(0.08)	(0.10)	(0.07)	(0.08)
Art	3.33***	2.15	3.01***	2.37	2.39***	2.20	0.50***	0.71
	(0.05)	(0.06)	(0.14)	(0.15)	(0.08)	(0.04)	(0.03)	(0.04)
Business	3.19***	1.74	2.93*	2.54	2.71	2.77	1.13*	1.47
	(0.13)	(0.10)	(0.18)	(0.08)	(0.14)	(0.08)	(0.12)	(0.09)
Engineering	3.18***	1.81	3.22***	2.63	2.65	2.49	0.84*	1.10
	(0.08)	(0.07)	(0.09)	(0.07)	(0.07)	(0.07)	(0.08)	(0.06)
Medicine	3.22***	1.89	3.42**	2.55	2.25	2.55	0.50	0.98
	(0.13)	(0.14)	(0.16)	(0.15)	(0.25)	(0.19)	(0.19)	(0.17)
Law	4.00***	1.65	3.87***	2.63	2.18	2.68	0.73	1.27
	(----)	(0.36)	(0.15)	(0.25)	(0.55)	(0.47)	(0.43)	(0.61)
Nursing	3.22***	1.72	3.31*	2.68	2.72	2.47	0.58	0.66
	(0.19)	(0.11)	(0.09)	(0.27)	(0.13)	(0.21)	(0.11)	(0.18)
Public health	3.05*	2.21	2.95	2.79	2.20	2.64	0.58	0.90
	(0.15)	(0.23)	(0.45)	(0.24)	(0.35)	(0.11)	(0.20)	(0.12)
Multidisciplinary	3.32***	2.04	3.30***	2.69	2.52	2.48	0.50***	0.85
	(0.04)	(0.05)	(0.07)	(0.07)	(0.05)	(0.06)	(0.03)	(0.04)
Undecided	3.15***	2.10	2.99	2.24	2.73	2.40	0.69	0.77
	(0.18)	(0.20)	(0.20)	(0.34)	(0.21)	(0.15)	(0.15)	(0.13)
Other	3.33***	2.05	3.04***	2.57	2.37	2.46	0.60**	0.83
	(0.06)	(0.07)	(0.09)	(0.10)	(0.10)	(0.12)	(0.09)	(0.09)
Housing								
Campus residence hall	3.32***	1.98	3.22***	2.67	2.54*	2.43	0.54***	0.87
	(0.02)	(0.04)	(0.04)	(0.06)	(0.05)	(0.05)	(0.03)	(0.04)
Fraternity/sorority	3.36***	1.87	3.36	3.10	2.42	2.56	0.74	1.00
	(0.10)	(0.10)	(0.09)	(0.14)	(0.20)	(0.13)	(0.09)	(0.18)
Other campus housing	3.36***	2.07	3.23***	2.57	2.64**	2.31	0.58*	0.75
	(0.08)	(0.08)	(0.11)	(0.16)	(0.15)	(0.08)	(0.06)	(0.06)
Off-campus housing	3.34***	2.06	3.04***	2.46	2.39	2.39	0.61***	0.90
	(0.04)	(0.05)	(0.10)	(0.10)	(0.05)	(0.06)	(0.03)	(0.06)
Parent/guardian's home	3.19***	1.90	2.88***	2.15	2.74*	2.52	0.52**	0.81
	(0.11)	(0.06)	(0.11)	(0.09)	(0.11)	(0.09)	(0.05)	(0.07)
Other	3.31***	2.32	2.79	2.04	2.36	2.17	0.41*	0.94
	(0.12)	(0.22)	(0.28)	(0.28)	(0.21)	(0.21)	(0.10)	(0.18)

Notes: *p<0.05; **p<0.01; ***p<0.001. Standard errors (SE) are clustered by campus and listed in parentheses. "Tx" is any past-year therapy and/or medication.

Table 9. Multivariate Correlates of Attitudes and Knowledge among Undergraduates with "Any Mental Health Problem"

	Perceived need		Knowledge		Stigma, perceived		Stigma, personal	
	β	95% CI	*β*	95% CI	*β*	95% CI	*β*	95% CI
Age								
18	-0.13*	-0.24, -0.01	-0.16**	-0.28, -0.04	-0.002	-0.15, 0.14	-0.06	-0.14, 0.02
19	Ref	---	---	---	---	---	---	---
20	0.07	-0.04, 0.18	0.14*	0.03, 0.25	-0.02	-0.12, 0.08	-0.05	-0.12, 0.03
21	0.12	-0.01, 0.25	0.17**	0.05, 0.28	-0.01	-0.12, 0.10	0.02	-0.07, 0.12
22	0.20*	0.04, 0.35	0.21***	0.11, 0.30	0.03	-0.14, 0.20	0.003	-0.10, 0.10
23+	0.13	-0.02, 0.29	0.08	-0.09, 0.25	0.19	-0.01, 0.39	0.04	-0.09, 0.18
Gender								
Female	Ref	---	---	---	---	---	---	---
Male	-0.43***	-0.53, -0.32	-0.16***	-0.24, -0.09	0.14**	0.06, 0.22	0.26***	0.21, 0.31
Sexuality								
Heterosexual	Ref	---	---	---	---	---	---	---
Bisexual	0.32***	0.17, 0.46	0.07	-0.06, 0.21	0.12	-0.05, 0.29	-0.08	-0.18, 0.02
Gay/lesbian	0.51***	0.37, 0.65	0.19**	0.06, 0.31	0.11	-0.04, 0.26	-0.26***	-0.35, -0.17
Other	0.36***	0.23, 0.49	0.08	-0.04-0.22	0.17*	0.002, 0.35	-0.13**	-0.23, -0.04
Race/ethnicity								
White	Ref	---	---	---	---	---	---	---
African American	-0.26*	-0.51, -0.02	0.07	-0.11, 0.26	0.28*	0.01, 0.55	0.31*	0.07, 0.54
Latino/a	-0.11	-0.27, 0.05	0.09	-0.07, 0.26	0.04	-0.12, 0.21	0.03	-0.09, 0.15
Asian	-0.30***	-0.45, -0.16	-0.17*	-0.30, -0.03	0.10	-0.06, 0.25	0.46***	0.35, 0.56
Multi-race/ethnicity	0.01	-0.13, 0.14	0.02	-0.10, 0.13	-0.001	-0.14, 0.14	-0.02	-0.08, 0.05
Other	-0.10	-0.30, 0.10	-0.05	-0.18, 0.08	0.05	-0.09, 0.19	0.003	-0.13, 0.14
Religiosity								
Very	-0.14*	-0.27, -0.01	0.05	-0.13, 0.23	0.03	-0.15, 0.21	0.07	-0.05, 0.18
Fairly	-0.06	-0.14, 0.02	0.08	-0.01, 0.18	0.03	-0.12, 0.17	0.14***	0.09, 0.20
Not too	0.04	-0.04, 0.11	0.05	-0.04, 0.14	-0.03	-0.14, 0.08	0.04	-0.01, 0.10
Not at all	Ref	---	---	---	---	---	---	---
Parental education								
Non-first-generation	Ref	---	---	---	---	---	---	---
First-generation	0.03	-0.02, 0.09	-0.05	-0.13, 0.04	0.15*	0.04, 0.26	0.03	-0.04, 0.09
Citizenship								
U.S.	Ref	---	---	---	---	---	---	---
International	-0.17	-0.35, 0.01	-0.05	-0.21, 0.12	0.26***	0.11, 0.41	0.62***	0.45, 0.80
Academic discipline								
Humanities	-0.05	-0.29, 0.20	-0.17	-0.36, 0.01	-0.05	-0.19, 0.09	-0.002	-0.18, 0.17
Social sciences	Ref	---	---	---	---	---	---	---
Natural sciences	-0.21*	-0.38, -0.04	-0.17*	-0.33, -0.01	-0.08	-0.26, 0.09	0.09	-0.06, 0.23
Art	-0.06	-0.20, 0.08	-0.19	-0.44, -0.07	-0.28***	-0.42, -0.15	-0.05	-0.13, 0.03
Business	-0.39**	-0.62, -0.16	-0.19*	-0.34, -0.03	0.14	-0.01, 0.29	0.52***	0.37, 0.68
Engineering	-0.26**	-0.43, -0.09	-0.02	-0.17, 0.12	-0.02	-0.15, 0.11	0.19**	0.06, 0.32
Medicine	-0.29*	-0.52, -0.06	0.01	-0.23, 0.25	-0.05	-0.38, 0.27	0.11	-0.18, 0.39
Law	0.04	-0.71, 0.79	0.48	-0.002, 0.97	-0.13	-0.76, 0.51	0.15	-0.40, 0.71
Nursing	-0.22*	-0.44, -0.01	0.15	-0.16, 0.46	0.08	-0.29, 0.45	-0.13	-0.39, 0.12
Public health	-0.13	-0.39, 0.14	0.02	-0.38, 0.43	0.01	-0.32, 0.34	0.11	-0.07, 0.29
Multidisciplinary	-0.12	-0.26, 0.02	0.04	-0.07, 0.14	-0.05	-0.16, 0.07	0.02	-0.07, 0.11
Undecided	0.11	-0.22, 0.43	-0.17	-0.54, 0.20	-0.03	-0.27, 0.22	0.04	-0.14, 0.22
Other	-0.09	-0.24, 0.05	-0.10	-0.22, 0.02	-0.15	-0.36, 0.07	0.04	-0.11, 0.18
Housing								
Campus residence hall	Ref	---	---	---	---	---	---	---
Fraternity/sorority	0.02	-0.19, 0.22	0.23*	0.03, 0.42	-0.03	-0.25, 0.19	0.09	-0.16, 0.34
Other campus housing	0.07	-0.07, 0.20	-0.14	-0.36, 0.09	0.01	-0.20, 0.22	-0.06	-0.15, 0.03
Off-campus housing	0.02	-0.09, 0.14	-0.27***	-0.42, -0.12	-0.10	-0.21, 0.01	0.02	-0.04, 0.09
Parent/guardian's home	-0.20	-0.40, 0.002	-0.51***	-0.66, -0.36	0.09	-0.09, 0.27	-0.04	-0.14, 0.07
Other	0.18	-0.17, 0.52	-0.60**	-1.01, -0.20	-0.29	-0.62, 0.04	-0.04	-0.28, 0.19

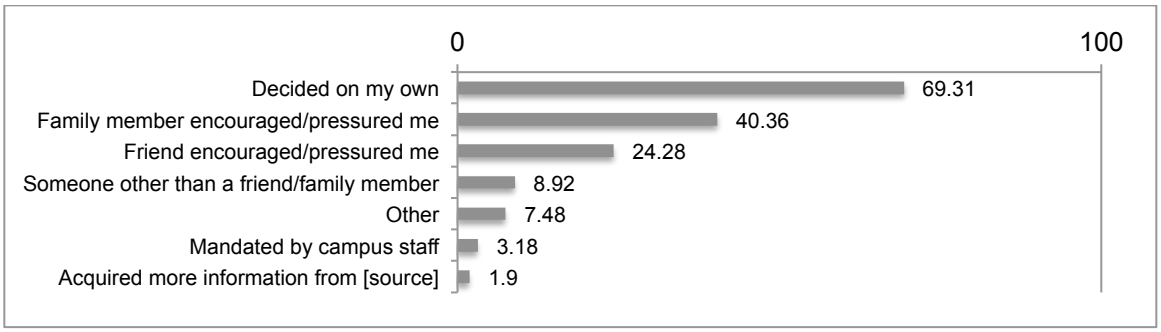
Notes: *p<0.05; **p<0.01; ***p<0.001. Separate OLS regression models are estimated for each of the four attitudinal outcomes. Each model controls for age, gender, sexuality, race/ethnicity, parental education, citizenship, religiosity, academic discipline, and housing with coefficients, two-tailed t-tests of significance, and 95% CI (confidence intervals) reported in the table. Reference categories ("Ref") are: age 19, female, heterosexual, white, non-first-generation, U.S. citizen, "not religious at all", social sciences, and campus residence hall.

Table 10. Multivariate Correlates of Past-year and Current Therapy and Medication with Attitudes and Knowledge among Undergraduates with "Any Mental Health Problem"

	Past-year						Current					
	Tx		Therapy		Medication		Tx		Therapy		Medication	
	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI
Perceived need	2.51***	2.35, 2.67	3.02***	2.73, 3.34	1.92***	1.80, 2.04	2.38***	2.24, 2.53	3.63***	3.19, 4.14	1.96***	1.84, 2.08
Knowledge	1.58***	1.49, 1.67	2.02***	1.85, 2.20	1.22***	1.15, 1.29	1.49***	1.41, 1.59	2.16***	1.94, 2.40	1.26***	1.20, 1.33
Stigma, perceived	1.07***	1.04, 1.11	1.08***	1.05, 1.11	1.08**	1.03, 1.14	1.07**	1.02, 1.12	1.08**	1.02, 1.14	1.08**	1.03, 1.14
Stigma, personal	0.82***	0.77, 0.86	0.81***	0.76, 0.86	0.82***	0.76, 0.88	0.78***	0.73, 0.83	0.77***	0.69, 0.85	0.77***	0.71, 0.84

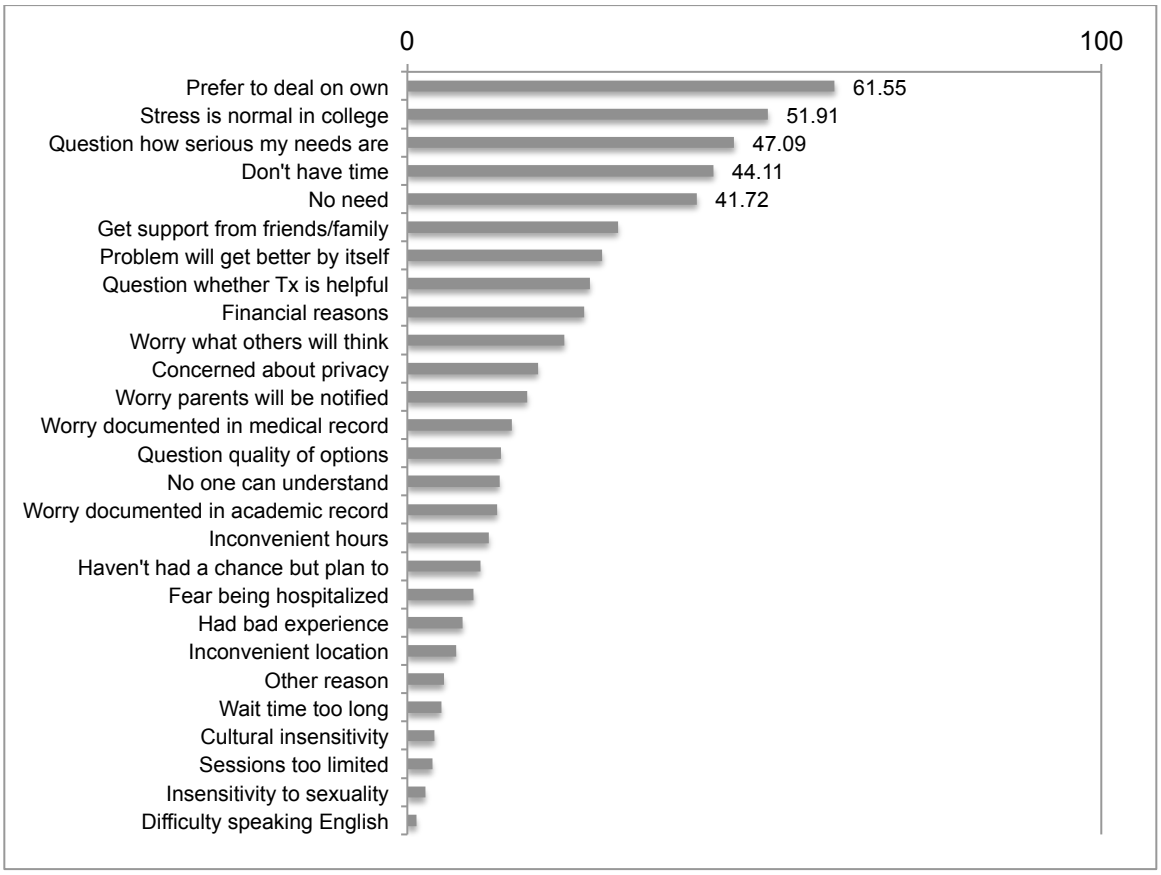
Notes: *p<0.05; **p<0.01; ***p<0.001. A separate logistic regression model is estimated for each of the four attitudinal measures (key independent variables) for each of the six behavioral outcomes (24 models in total) with two-tailed t-tests of the significance of odds ratios (ORs) and 95% CI (confidence intervals) reported in the table. Each logistic regression model controls for age, gender, sexuality, race/ethnicity, parental education, citizenship, religiosity, academic discipline, and housing. "Tx" is any therapy and/or medication.

Figure 3a. Reported Reasons for Help-seeking among Undergraduates with Past-year Treatment



Notes: Figure values are percentages of the weighted sample among students with past-year therapy and/or medication.

Figure 3b. Reported Barriers among Undergraduates with Untreated Symptoms



Notes: Figure values are percentages of the weighted sample among students with untreated symptoms (defined as those meeting criteria for "any mental health problem" who had not received any therapy or medication in the past year).

Table 11. Mean Attitudes and Knowledge among Undergraduates with Untreated Symptoms by Commonly Reported Barriers

	Perceived need	Knowledge	Stigma, perceived	Stigma, personal
"Prefer to deal with issues on my own" (61.55%)	2.10 (0.03)	2.49 (0.08)	2.48 (0.04)	0.87 (0.04)
"Stress is normal in college" (51.91%)	2.10 (0.03)	2.49 (0.07)	2.42 (0.05)	0.87 (0.03)
"Question how serious my needs are" (47.09%)	2.34 (0.03)	2.48 (0.08)	2.45 (0.05)	0.76 (0.04)
"Don't have time" (44.11%)	2.32 (0.04)	2.50 (0.08)	2.46 (0.05)	0.80 (0.04)
"No need" (41.72%)	1.25 (0.03)	2.63 (0.05)	2.34 (0.04)	0.94 (0.04)

Notes: Standard errors (SE) are clustered by campus and listed in parentheses.

CHAPTER 4: A NOVEL INTERVENTION PROMOTING EATING DISORDER TREATMENT LINKAGE AMONG COLLEGE STUDENTS

Chapter Overview

There is a substantial and growing body of evidence supporting the effectiveness of mental health treatment: psychotherapy reduces disability, morbidity, and mortality, improves functioning, and decreases use of more costly and intensive medical care (Chiles, Lambert, & Hatch, 2002; Dixon-Gordon, Turner, & Chapman, 2011; Lazar & Gabbard, 1997; Linehan et al., 2006; Pallak, Cummings, Dorken, & Henke, 1995). The average effects of therapy are widely accepted to be significant and large (Chorpita et al., 2011; Smith, Glass, & Miller, 1980). That most college students with mental health problems do not receive treatment is a missed opportunity bearing significant negative consequences at the individual, institutional, and societal levels.

Current campus-based efforts to promote help-seeking (as reviewed in chapter 2) do not fully account for the needs and preferences of students with untreated mental health problems (as presented in chapter 3). The limited success of campus-based help-seeking interventions is not surprising given recent evidence that today's college students already have low stigma, high knowledge, and adequate health insurance (Eisenberg et al., 2009b; Eisenberg et al., 2007a; Yorgason et al., 2008). While stigma, misinformation, and lack of access are contributing factors in the campus mental health treatment gap, these and other traditionally-emphasized barriers only partially explain the high prevalence of untreated disorders.

Current help-seeking intervention strategies are failing to address the needs of a large proportion of students with untreated mental health problems. In both research and practice, little attention has been paid to addressing the actual factors that students most commonly report as barriers to seeking help; these include lack of time, lack of perceived need, and a desire to cope on their own. Such reasons suggest that for many students, the decision to initiate treatment is not sufficiently urgent or salient to yield help-seeking behavior. In other words, help-seeking for mental health appears highly susceptible to inertia. This scenario presents a strong case for a behavioral economic/social psychological approach to promoting mental health service utilization on college campuses.

In this chapter, I introduce and evaluate a novel approach for narrowing the campus mental health treatment gap based on behavioral economics and social psychology. This approach is applied in a large-scale intervention designed to promote help-seeking among undergraduates with untreated symptoms of eating disorders. As described below (*see Intervention Study Design*), I conducted two randomized trials of the intervention along with post-intervention qualitative interviews. Before describing these studies, I begin with a review of the prevalence and treatment of eating disorders.

Background

Eating disorders have the highest rate of mortality of any mental illness (Sullivan, 1995). Age of onset coincides with the traditional undergraduate years (ages ~18-25): age 19 for anorexia nervosa (AN), age 20 for bulimia nervosa (BN), and age 25 for binge eating disorder (BED) (Hudson, Hiripi, Pope Jr, & Kessler, 2007). As a setting,

colleges and universities provide access to a large, epidemiologically vulnerable population and present a unique opportunity for early intervention. As established in chapter 3, eating disorders are highly prevalent in college populations: nearly 20% of undergraduates have clinically significant symptoms.[25] Longitudinal research has shown that symptoms of eating disorders (even at sub-clinical levels) are highly persistent over time (Eisenberg et al., 2011b). Relative to other common mental health conditions, eating disorders are significantly more persistent: in one study, 59% of students with positive eating disorder screens at baseline and 27% of students with positive depression screens at baseline screened positive again at two-year follow-up (Zivin, Eisenberg, Gollust, & Golberstein, 2009).

Prior studies have found that the vast majority of students with apparent eating disorders (roughly 60%) do not receive treatment. The prevalence of diagnosable eating disorders is more than three times the rate of treatment use in college populations (Eisenberg et al., 2011b).[26] With greater than 20 million students enrolled in U.S. higher education (approximately half of all young adults) (NCES, 2012), there are likely over one million students whose eating disorders go untreated in any given year. Overall, there is substantial unmet for eating disorder treatment, both in absolute terms and in comparison to other common mental health conditions.[27]

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[25]These findings are consistent with numerous other studies, which estimate that between 5% and 17% of students meet diagnostic criteria for an eating disorder (Becker, Franko, Nussbaum, & Herzog, 2004; Prouty, Protinsky, & Canady, 2002), with less than 30% receiving treatment (Cachelin & Striegel-Moore, 2006).

[26]This gap would be even wider with respect to lifetime diagnoses (Eisenberg et al., 2011b).

[27]A systematic review of eating disorder treatment rates in community samples found that between 17% and 31% of individuals with a diagnosable eating disorder received treatment (Hart, Granillo, Jorm, & Paxton, 2011), whereas a systematic review of depression treatment found rates between 17% and 77% (Chronique Mon & Chronic My, 2002).

Early detection and treatment of eating disorders greatly increases the likelihood of full recovery (Becker et al., 2004; Fichter, Quadflieg, & Hedlund, 2006). The majority of young people with eating disorders do not receive treatment and for those who do, the median delay in initial treatment contact is over 10 years (Browne, Wells, & Mcgee, 2006). Left untreated, eating disorders typically become more severe and refractory to treatment (Becker et al., 2004; Fichter et al., 2006). This is particularly true for AN, which becomes "highly entrenched and resistant to change" over time (Walsh, 2013, 477). Untreated eating pathology is also associated with significantly increased risk for developing comorbid psychiatric conditions, including depression, anxiety, and suicidal ideation (Altman & Shankman, 2009; Eisenberg et al., 2011b; Harrop & Marlatt, 2010; Mangweth et al., 2003; McElroy, Kotwal, & Keck, 2006). Given the impact of eating disorders on mental and physical health and the connection therein with social, academic, and economic outcomes, an effective intervention to increase rates of treatment utilization could have broad societal effects extending well beyond the campus setting.

Conceptual Framework

Conceptual Framework Overview. Most undergraduates with apparent eating disorders (and other mental conditions) do not receive treatment, an outcome at odds with what the help-seeking literature would presume based on students' reported attitudes and knowledge. Though initially perplexing, students' non-help-seeking is less so when considered in the broader context of other health behaviors such as physical activity, diet, and substance use. Even the best laid plans to exercise, eat healthfully, and quit smoking frequently fall short (Applebaum, 2008).

Behavioral economics and social psychology remind us that individuals often appear irrational in that they do not act as expected based on apparent preferences, constraints, and information (Camerer & Div, 2003). Much of the work in behavioral economics and social psychology has been dedicated to identifying cognitive biases—patterns in human decision-making that deviate from standards of rationality (Kahneman & Tversky, 1972). Cognitive biases often result in “severe and systematic errors” (Tversky & Kahneman, 1974, 1125). Despite their pervasive and often negative effects, cognitive biases and their fundamental underlying concepts are rarely acknowledged in theoretical and empirical research on help-seeking for mental health.

Recognizing and accounting for certain cognitive biases may inform new understanding of the campus mental health treatment gap. In particular, two concepts are ripe for exploration: (1) social comparison bias—the tendency of individuals to base their behavior on inaccurate assessments of themselves relative to others (LaBrie, Hummer, Huchting, & Neighbors, 2009); and (2) time preferences—how individuals value present versus future costs and benefits—and the related behavior of procrastination—the perpetual postponing of actions regarded as optimal from the perspective of prior and even future periods (Day, Mensink, & O'Sullivan, 2000).

The potential relevance of these ideas is motivated by factors not commonly accounted for in campus mental health services research. First, students with mental health problems may misperceive the severity of their symptoms and thus their need for treatment as a result of biased social comparisons. Second, mental health problems may affect the rate at which students discount the future and/or prioritize the present. Relatedly, the task of seeking mental health treatment may be especially susceptible to

procrastination. This section provides an overview of each of these concepts and their relevance to mental health and mental health service utilization. This conceptual framework is illustrated in ***Figure 4***.

Social Comparison Bias. The basis of social comparison theory is that "there exists, in the human organism, a drive to evaluate his opinions and his abilities" (Festinger, 1954, 117). In other words, it is a theory about "our quest to know ourselves, about the search for self-relevant information and how people gain self-knowledge and discover reality about themselves" (Mettee & Smith, 1977, 69-70). Importantly, when individuals evaluate themselves, they rely on comparisons with others as an external standard for judgment (Krueger, 2004). These social comparisons have profound influence: individuals' attitudes, motivations, and behaviors derive in large part from assessments of self in the context of others (Buunk, Gibbons, & Buunk, 2013; Garcia, Song, & Tesser, 2010). This is particularly true during the college years (and other critical periods of identity formation) (Borsari & Carey, 2001; LaBrie et al., 2009; Turrisi et al., 2009).

Research, in the campus context and other settings, has revealed not only the ubiquity and power of social comparison but also the profound biases that shape this process: people are woefully unable "to make correct estimates of their relative standing in the population" (Krueger, 2004, 317). The inaccuracy of these estimates may stem from initially biased self-assessments (i.e., misestimating how well one is doing), biased assessments of others (i.e., misestimating how well others are doing), and/or biased assessments of self relative to others (i.e., misestimating how well one is doing compared to others, likely drawn from misestimated self-assessments and misestimated

assessments of others). In the college context, one of the most classic examples of biased social comparisons is with regard to binge drinking behavior. Numerous studies have found that: (1) students' consumption of alcohol is shaped by how much they think other students drink; (2) most students overestimate how much other students drink; and (3) students adjust their behaviors (i.e., drink more) to match their inaccurate perceptions of campus norms (Mäkelä, 1997; Perkins & Berkowitz, 1986; Prentice & Miller, 1993; Thombs, Wolcott, & Farkash, 1997; Wood, Nagoshi, & Dennis, 1992).

Social comparison bias has been studied across disciplines (e.g., behavioral economics, social psychology, organizational studies) and contexts (e.g., health, academic performance, professional competition, wealth). Scholars have endeavored to understand patterns in social comparison bias and have identified numerous, interrelated biases,[28] the most basic of which is that individuals rarely assess themselves objectively (as noted above). Some social psychologists argue that self-assessment is inherently subjective. Most relevant to the conceptual framework laid out here is the notion of "direction"—the "standing of the target with whom the comparison is made" (Arigo, Suls, & Smyth, 2014, 3). Comparisons can be made in an upward direction (relative to a target perceived to be "better off") or in a downward direction (relative to a target perceived to be "worse off") (Arigo et al., 2014). There is general consensus that social comparison is typically skewed in a "self-flattering direction" (Hoorens, 1993, 129). In other words, individuals tend to make comparisons by "choosing comparison counterparts who do not make themselves look bad on self-

[28]The study of social comparison has revealed many nuanced biases, discussions of which are beyond the scope of this chapter (e.g., false consensus, confirmation bias, and the Barnum effect).

relevant dimensions in the social context" (Garcia et al., 2010, 98). As described below, this is especially true with regard to social comparisons of health status.

Social Comparison Bias and Help-seeking. Social comparison processes play a pivotal role in interpretation of health risks and the decision to seek care (Buunk et al., 2013). Research suggests that when judging personal health risks, people enter into comparisons with an "ulterior motive of appearing better off than their comparison others" (Klein & Weinstein, 1997, 26).[29] With regard to self-evaluations of health and the decision to seek care, many individuals maintain "self-serving biases about the specific behaviors associated with health problems" (Buunk et al., 2013, 30). Specifically, individuals with health risks tend to "compare with others in still worse condition" (Buunk et al., 2013, 31) and, as a result of these downward comparisons, tend to believe they are healthier than their peers (Harris & Middleton, 1994; Helweg-Larsen & Shepperd, 2001). Research has shown that this bias is most pronounced when individuals are asked to assess their health relative to a vague comparison (i.e., to "the average other" or "most others"). Individuals are more accurate when the chosen comparison is specific (i.e., when asked to compare their own health to that of their "classmates" or "other undergraduates") (Hoorens, 1993). Based on what is known about social comparison bias, particularly in health contexts, researchers and policymakers have suggested that interventions may be more effective if they incorporate "relative risk" information using specific comparison targets (Buunk et al., 2013).

In sum, social comparisons have profound influence for individuals' attitudes, motivations, and behaviors, especially during critical periods of identity formation (such

[29]Various terms have been used to describe this component of social comparison bias, including "illusion of unique invulnerability", "illusory superiority", and "unrealistic optimism" (Hoorens, 1993; Perloff & Fetzer, 1986).

as the undergraduate years). Self-assessments (and the resulting effects) are plagued by inaccuracies stemming from systematic biases, including a self-serving bias towards downward comparison. The tendency to compare oneself with a “worse off” target is even more pronounced in the context of self-evaluations of health. In this way, social comparison bias may help to explain why so many students struggling with significant mental health problems report not seeking help for reasons such as “stress is normal in college”, “I question how serious my needs are”, and “I haven’t had a need”.

Time Preferences. Decisions involving costs and benefits occurring at different points in time are called “intertemporal choices”, the outcomes of which reflect individuals’ time preferences. Most decisions are intertemporal in nature, requiring individuals to weigh present utility against future utility: *Should I study for my exam today or tomorrow? Should I eat a donut or resist temptation?* A vast literature has examined intertemporal choice across individuals and contexts. There is remarkable agreement that almost everyone discounts the future relative to the present (O'Donoghue & Rabin, 2001; Soman et al., 2005). The manner and degree to which individuals discount the future and prioritize the present is a matter of personal time preferences. Given their ubiquitous role in human decision-making, time preferences are a relevant factor in addressing a wide range of health behaviors. Time preferences have two main elements: “future discounting” and “present-orientation”. Both components can be problematic depending on their levels and on individuals’ self-awareness.

Future Discounting: Equation [A] represents the standard exponential discounting model in which preferences are time-consistent (i.e., the future is devalued at a constant

rate). The utility stream is a weighted sum of utility at each time point, with weights diminishing exponentially in accordance with δ. Relative to today's utility (u_0), tomorrow's (u_1) is discounted by δ, the next day's (u_2) by δ^2, and the following day's (u_3) by δ^3.

$$U^0(u) = u_0 + \delta u_1 + \delta^2 u_2 + \delta^3 u_3 + \cdots = u_0 + \sum_{i=1}^{\infty} \delta^i u_i \text{ [A]}$$

A constant or exponential discount factor, δ, takes values between zero and one. Smaller values of δ represent a higher degree of discounting (Soman et al., 2005). The exponential discounting model assumes that individuals' preferences do not change simply with the passing of time. Behavioral economists have demonstrated the limitations of a single exponential discount factor in explaining real-life decisions involving intertemporal tradeoff (Frederick, Loewenstein, & O'Donoghue, 2002; Loewenstein, 1987; Loewenstein, 1988; Loewenstein & Prelec, 1992; Thaler, 1981). Human decision-making is more accurately represented with inclusion of a 'hyperbolic discounting function' that accounts for dynamic time-inconsistency, namely the prevailing tendency to prioritize the present (Rubinstein, 2003).

Present-orientation and Time-inconsistency: The hyperbolic discounting model represented in equation [B] includes the discount factor, δ, alongside a new parameter, β, which represents "time-inconsistent preference for immediate gratification" (O'Donoghue & Rabin, 2001, 126). Parameter β is often interpreted as a measure of present-orientation or impulsivity, and is sometimes called an immediacy effect (Cawley & Ruhm, 2012). Like the discount factor, the time-inconsistent preference parameter takes values between zero and one (Cartwright, 2011), with smaller values indicative of greater present-orientation and

time-inconsistency.[30] Equation [B] is widely recognized to be more accurate than equation [A] for modeling choice over time; as such, it is the dominant model used in behavioral economics.

$$U^0(u) = u_0 + \beta\delta u_1 + \beta\delta^2 u_2 + \beta\delta^3 u_3 + \cdots = u_0 + \sum_{i=1}^{\infty} \beta\delta^i u_i \text{ [B]}$$

Time-inconsistent preferences are associated with a host of adverse outcomes, including substance abuse, overeating, poor diet, lack of exercise, impulsivity, pathological gambling, early onset of sexual activity, and poor academic performance (Ayduk et al., 2000; Bickel, Odum, & Madden, 1999; Chesson et al., 2006; Fields, Sabet, Peal, & Reynolds, 2011; Kirby, Winston, & Santiesteban, 2005; Kirby, 2009; Petry & Casarella, 1999).[31]

Time Preferences and Eating Disorders. A significant body of literature documents pathological relationships between problematic time preferences (high future discounting and present-orientation), mental illness, and certain health behaviors, including substance abuse and self-injury (e.g., Balodis, Potenza, & Olmstead, 2009; Dougherty et al., 2013; Kollins, 2003; Lilienthal & Weatherly, 2013a; Lilienthal & Weatherly, 2013b; Murphy & Garavan, 2011; Raffard, Esposito, Boulenger, & Van der Linden, 2013). Recent research suggests that problematic time preferences may be a "trans-disease" phenomenon (i.e., a problem that occurs across a range of mental illnesses) (Bickel, Jarmolowicz, Mueller, Koffarnus, & Gatchalian, 2012). Though

[30] If $\beta = 1$, the hyperbolic discounting model is reduced to the exponential discounting model.

[31] Individual time preferences have typically been elicited with regard to monetary outcomes. Limited extant research has investigated future discounting and present-orientation using food as the reward; these studies have found that food tends to be discounted at a higher rate than several other outcomes, including money (Charlton & Fantino, 2008; Odum, Baumann, & Rimington, 2006). At least one study has compared discounting for health and money, finding high within-person consistency for both types of discounting (Bradford, 2010).

relevant to other common conditions, including depression and anxiety, here I focus exclusively on the relationship between time preferences and eating disorders.[32]

Eating disorders exist along on a spectrum of obsessive-compulsive and impulsive traits (Claes, Nederkoorn, Vandereycken, Guerrieri, & Vertommen, 2006). A distinction is often made between eating disorders characterized by a loss of control (BN, BED, and the binge-purge subtype of anorexia nervosa (AN-BP)) and those characterized by excessive self-control (the restrictive subtype of anorexia nervosa (AN-R)) (Dawe & Loxton, 2004). Across the spectrum, eating disorders may affect the degree to which individuals discount future costs and benefits and/or prioritize the present. Evidence is strongest for BN, BED, and AN-BP, though there is also evidence for AN-R.[33] Heightened impulsivity has been consistently found in individuals with BN, BED, and AN-BP (Dawe & Loxton, 2004). Impulsivity is characterized by a "lack of deliberation and a failure to consider risks and consequences before acting" (Fahy & Eisler, 1993, 193). Impulsivity is generally deemed problematic as it reflects a tendency to value immediate rewards over long-term wellbeing (Madden & Bickel, 2010). Research has shown that impulsivity is heightened in obese individuals (Borghans &

[32]Studies have shown that depression is predictive of high future discounting (e.g., Yoon et al., 2007). In fact some have specifically defined depression as a disorder characterized by unhealthy perceptions of the future (e.g., de Leval, 1995). Depression is also correlated with heightened impulsivity and present-orientation. Notably, impulsivity has been shown to vary in accordance with symptom severity in depressed individuals (Corruble, Damy, & Guelfi, 1999). Anxiety, "anticipation of future threat", manifests in avoidance and fear of unpleasant events (APA, 2013, 198). Anxiety is known to build as time to a stressful event increases (Nomikos, Opton, Averill, & Lazarus, 1968). Feelings of anxiety and worry spike in immediate anticipation of the event, triggering the body's "flight" response (Caplin & Leahy, 2001). As mentioned, time-consistency requires that individuals' preferences do not change simply with the passing of time. While nothing may have changed about the event, the interaction of anxiety and the passage of time can engender time-inconsistent preferences. Relative to depression and eating disorders, there is less empirical evidence around the relationship between problematic time preferences and anxiety.

[33]Research in this area has focused almost entirely on conditions characterized by heightened impulsivity (i.e., a lack of control) (Claes, Vandereycken, & Vertommen, 2005; Evenden, 1999). Individuals with AN-R demonstrate unusually high levels of self-control as they commonly sacrifice immediate rewards (food) to achieve long-term goals (weight loss). The only other mental illness that does not seem to be associated with impulsivity is Obsessive–Compulsive Disorder (Ritschel et al., 2015).

Golsteyn, 2006; Komlos, Smith, & Bogin, 2004; Rasmussen, Lawyer, & Reilly, 2010; Smith, Bogin, & Bishai, 2005; Weller, Cook, Avsar, & Cox, 2008; Zhang & Rashad, 2008), and those with BED (Manwaring, Green, Myerson, Strube, & Wilfley, 2011), BN (Kemps & Wilsdon, 2010), and AN-BP (Hoffman et al., 2012; Waxman, 2009). Common to these disorders is an attentional bias towards food (Brooks, Prince, Stahl, Campbell, & Treasure, 2011; Svaldi, Tuschen-Caffier, Peyk, & Blechert, 2010) and a difficulty controlling impulses related to food.

For individuals with BN and/or BED, “the impulse to eat is experienced as out of control” and leads to “erratic and unstable behavior” (Palmer, 1979, 188). Binging (recurrent episodes of excessive eating accompanied by a feeling that one cannot stop eating or control what or how much one is eating) reflects impulsivity and impaired self-control (APA, 2013). Purging (e.g., self-induced vomiting, laxative abuse) is often viewed as an impulsive decision, one intended to control weight and reduce anxiety at the expense of long-term physical and psychological health (Lilienthal & Weatherly, 2013a). Bulimics often report a desire to “quit” binging and purging (Orbanic, 2001). In this way, bulimics can be thought of as trapped in a time-inconsistent loop, whereby the “future self” expends enormous energy trying to fight the urge to binge, only to be overcome by the “present self”. There are also strong associations between binging, purging, and other forms of impulsivity: individuals with BN and AN-BP more frequently engage in behaviors such as substance abuse, self-injury, stealing, and sexual promiscuity (Hoffman et al., 2012; Lledo & Waller, 2001; Pidcock, Fischer, Forthun, & West, 2000; Vervaet, Audenaert, & Van Heeringen, 2003). Some have even classified

BN as a form of addictive behavior (e.g., De Silva & Eysenck, 1987). In sum, research suggests that certain eating disorders are associated with problematic time preferences.

Procrastination. The final element considered in this conceptual framework is the behavior of procrastination, which is closely related to time preferences. There are two main forms of procrastination: “trait procrastination” refers to individuals’ predisposition to procrastinate in general, whereas “state procrastination” is task-specific (Schouwenburg, Lay, Pychyl, & Ferrari, 2004). Both forms are likely to impact help-seeking for mental health. Procrastination involves voluntarily delaying or avoiding an intended course of action “despite expecting to be worse off for the delay” (Steel, 2007, 66). In this way, procrastination is a self-defeating behavior or a “transgression against the self” (Wohl, Pychyl, & Bennett, 2010, 803).

Procrastination is extremely prevalent, particularly in college student populations. Academic procrastination is the most commonly studied form of procrastination (Fischer, 2001). Research findings suggest that nearly all college students (80–95%) procrastinate to some degree (Ellis & Knaus, 1979; O'Brien, 2002), with more than 50% engaging in chronic procrastination (Day et al., 2000; Haycock, 1993; Hill, Hill, Chabot, & Barrall, 1978; Onwuegbuzie & Jiao, 2000; Solomon & Rothblum, 1984; Wohl et al., 2010). Procrastinators characterize their behavior as harmful (Briody, 1980), and over 95% wish to reduce it (O'Brien, 2002). Procrastination is associated with feelings of shame and guilt (Fee & Tangney, 2000), poor academic performance (Steel, 2007), and negative health behaviors such as delaying medical treatment (Sirois, Melia-Gordon, & Pychyl, 2003). The deleterious effects of procrastination are cumulative: “each error of judgment causes a small loss, but these errors cumulatively result in large losses over

time and ultimately cause considerable regret on the part of the decision maker" (Akerlof, 1991, 3).

Individuals with mental illnesses habitually behave in ways that contradict their long-term preferences and best interests (e.g., binging and purging, socially isolating oneself, committing suicide). Evidence suggests that mental illness in general may be an important cause of procrastination (Beswick, Rothblum, & Mann, 1988; Ferrari, 1991; Flett, Blankstein, Hicken, & Watson, 1995; Haycock, McCarthy, & Skay, 1998; Martin, Flett, Hewitt, Krames, & Szanto, 1996; Parker & Endler, 1989; Rothblum, Solomon, & Murakami, 1986; Saddler & Sacks, 1993; Senécal, Koestner, & Vallerand, 1995; Solomon & Rothblum, 1984; Tice & Baumeister, 1997). For example, impulsivity is one of the traits most strongly associated with procrastination: "we are putting off tasks with long-term rewards because we are impulsively distracted by short-term temptations" (Steel, 2010, 926) (as mentioned above, heightened impulsivity has been found in individuals with certain eating disorders). These reinforcing relationships make procrastination a highly relevant yet largely overlooked factor in help-seeking for eating disorders (and mental health in general).

Procrastination and Help-seeking. The small proportion of adolescents and young adults who seek help for their mental health problems typically do so only after long delays (Laitinen-Krispijn, Van der Ende, Wierdsma, & Verhulst, 1999). Across mental disorders in the population at large, the median delay from illness onset to first treatment contact is roughly a decade (Wang et al., 2005). There are strong conceptual reasons to expect relationships between state (or task-specific) procrastination and use

of mental health services (and preventive health services more broadly (Bradford, 2010)).

Individuals do not procrastinate at random. There are numerous, highly interrelated factors that influence whether or not a task is procrastinated. First, the nature of the task itself in part determines whether or not individuals procrastinate (Steel, 2007). When asked why they procrastinate, the majority of people attribute their behavior to some unpleasant characteristic of the task (Briody, 1980; Solomon & Rothblum, 1984). Avoidance of unpleasant tasks is called “task aversion”. Though students report low levels of stigma and agree that mental health treatment is beneficial, it is easy to imagine how seeking help could be considered an unpleasant task, as noted below.

Second, individuals prefer to experience immediate rewards followed by future losses rather than immediate losses followed by future rewards (this is called a “sequence effect”). Additionally, decisions are more strongly influenced by potential losses than potential gains (Benzion, Rapoport, & Yagil, 1989; Tversky & Kahneman, 1991). Many health behaviors result in utility streams that do not reflect these preferences in that they have short-term costs and long-term benefits (Attema, 2011). For example, seeking mental health services likely entails an immediate cost in the form of time and discomfort. Although pharmacological treatment (e.g., antidepressants) can bring fast relief (Frazer & Benmansour, 2002), the full benefits of mental health treatment typically come weeks and months after the initial costs.[34] Procrastination occurs when present costs are unduly salient relative to future benefits. In other words,

[34]Therapy is the most common and effective treatment modality for eating disorders (although some medications have also been shown to be helpful (American Dietetic Association, 2006; Striege-Moore et al., 2000)).

procrastination is likely if the cost of seeking treatment today outweighs the perceived long-term benefits.

Third, the expected benefits of treatment are not only delayed but also highly uncertain. Behavioral economists have found that certain gains are preferred over uncertain gains but uncertain losses are preferred to certain losses (Ortendahl & Fries, 2002). In the case of mental health service utilization, there are certain and immediate costs and uncertain future benefits (treatment is not successful for everyone). Individuals are much less motivated to take action towards a goal if that goal does not produce tangible reward (Weber & Chapman, 2005).

A fourth factor is anticipated utility, which refers to the “perceived usefulness, or lack thereof, of seeking services from a psychotherapist” (Vogel et al., 2007, 412). Mental health problems impair concentration and cognitive functioning, which may make it more difficult to assess the already uncertain and delayed benefits of treatment (Eisenberg & Druss, 2015). Finally, procrastination is known to fluctuate based on the importance of the task. Procrastination is more likely for important tasks than unimportant tasks (O'Donoghue & Rabin, 2001). This is particularly true in the presence of multiple, competing demands (e.g., students’ coursework, social media, extracurricular activities). In other words, it is “easy to imagine college students procrastinating mental health care and other healthy behaviors. Unlike most of their activities (e.g., classes, assignments, exams, meetings, parties, and sports events), taking care of one’s mental health does not typically have a deadline or even a place on the to-do list” (Eisenberg et al., 2012a, 229). Seeking help for mental health could easily be delayed in favor of small, daily tasks with definite rewards. As help-seeking is

procrastinated (i.e., as delay to treatment increases), symptoms are likely to become more severe (Wang et al., 2005), making the task of seeking help that much more important and, as a result, unlikely.

Conceptual Framework Summary. There is limited empirical evidence on relationships between social comparison bias, time preferences, procrastination, and healthcare utilization or lack thereof (for mental health or otherwise). What evidence does exist strongly supports the conceptual argument laid out above. Future discounting and present-orientation are often classified as problems of self-control/self-regulation. Procrastination, the "quintessential self-regulatory failure" (Steel, 2007, 65), is predicted for tasks that have an "investment-like quality" (Prelec & Loewenstein, 1997, 100). Taking care of one's health is commonly described as an investment (Grossman, 1972). Procrastinators tend to have poorer health than non-procrastinators, likely due in part to their tendency to delay treatment seeking (Sirois et al., 2003). Individuals who procrastinate more than average also tend to engage in fewer wellness behaviors such as healthy eating and exercise (Sirois & Pychyl, 2002; Sirois et al., 2003).

The decision to seek non-urgent health care (i.e., preventative services) depends on: (1) assessments of risk, which may tend to be underestimations drawn from biased social comparisons; and (2) the relative value individuals assign to immediate and delayed outcomes (Redelmeier, Heller, & Weinstein, 1994; Redelmeier & Heller, 1993). Research has shown that future discounting and present-orientation are negatively correlated with use of preventive care, including mammograms, pap smears, prostate exams, flu shots, and cholesterol screens (Axon, Bradford, & Egan, 2009; Bradford, 2010; Picone, Sloan, & Taylor, 2004).

Emerging research also reveals that college students with mental health problems are in fact more likely to procrastinate seeking help. In a recent study using HMS data, mental health symptoms were positively associated with both future discounting and present-orientation and negatively so with service utilization. When asked "which of the following explain why you have not received medication or therapy for your mental or emotional health?", students with higher degrees of future discounting and present-orientation were more likely to report "I haven't had a chance but plan to go" as a reason for not seeking treatment (Eisenberg & Druss, 2015).

In sum, key concepts from behavioral economics and social psychology—social comparison bias, time preferences, and procrastination—may be important factors in explaining why the majority of college students with eating disorders are not seeking treatment (*see* ***Figure 4***). Though most students with untreated symptoms have positive attitudes and beliefs about mental health services, the task of seeking help does not appear to be a salient priority. Under similar circumstances, behavioral economics and social psychology have shown that individuals are highly responsive to interventions that reframe decisions and make it easier to commit to healthy choices. The underlying objective of such interventions is to engender urgency and combat inertia surrounding the behavior of interest. To do so, interventions often address specific cognitive biases, including the default bias, comparison bias, and sign effect (*see Intervention Components*).[35,36] Note that interventions do not actually reduce these biases directly,

[35]Other cognitive biases that have been addressed in mental health intervention research include: selection bias, detection bias, performance bias, and attrition bias (*for a meta-analysis, see* Cristea, Kok, & Cuijpers, 2015).
[36]The sign effect is closely related to the concept of loss aversion, which explains that "losses loom large than improvements or gains" (Kahneman, Knetsch, & Thaler, 1991, 199).

rather they reframe decisions to address "predictable irrationalities".[37] Based on this conceptual framework, I designed an online intervention to promote help-seeking for college students with untreated symptoms of eating disorders.

Intervention Study Design

Study Design Overview. The study was funded by the National Institutes of Health (1F31MH105149-01) and included three parts, listed here in chronological order: (1) a 12-week multi-campus randomized factorial design study (henceforth referred to as "Study #1"); (2) single-campus qualitative interviews with intervention participants from Study #1; and (3) a 12-week single-campus RCT (henceforth referred to as "Study #2").

Studies #1 and #2 began with an online survey administered to random samples of undergraduates (*see Student Recruitment*). In both studies, the baseline survey was used to identify students with untreated symptoms of eating disorders (*see Intervention Criteria*). The interventions administered in Studies #1 and #2 involved weekly messages over the course of 12 weeks, designed to encourage uptake of available eating disorder resources (i.e., "treatment linkage") (*see Intervention Message Content*).

In Study #1, students with untreated symptoms received a randomly assigned combination of three intervention components operationalized in the weekly messages (*see Intervention Components*). In keeping with the factorial design of Study #1 (*see Factorial Design, Study #1*), there was no control condition (i.e., all students with untreated symptoms received some form of intervention messages).

[37]"Predictably Irrational: The Hidden Forces That Shape Our Decisions" is a best-selling book about decision-making errors (Ariely & Jones, 2008).

In Study #2, students were randomly assigned to one of two conditions: intervention or control. Students with untreated symptoms in the intervention condition received messages encouraging help-seeking, while students with untreated symptoms in the control condition were not invited to participate in the intervention and thus did not receive any messages (*see RCT, Study #2*).

In both studies, all students with untreated symptoms at baseline (regardless of assigned condition) were invited to complete follow-up surveys (*see Student Recruitment*). This section describes all aspects of the study design, beginning with the study sites.

Study Sites. During the 2015 winter/spring semester (January-May), I conducted Study #1 on four campuses: University of Michigan (Ann Arbor, Michigan); Appalachian State University (Boone, North Carolina); Mercyhurst University (Erie, Pennsylvania); and Bard College (Annandale-on-Hudson, New York).[38,39] At University of Michigan (henceforth referred to as campus "A"), a large, selective, public university, 10,000 undergraduates were recruited for the baseline survey. At Appalachian State University (campus "B"), a large, non-selective, public university, 6,000 undergraduates were recruited for the baseline survey. At Mercyhurst University (campus "C"), a medium-sized, private Catholic college, 2,387 undergraduates were recruited for the baseline survey. At Bard College (campus "D"), a highly selective, private liberal arts college, 1,902 undergraduates were recruited for the baseline survey.

[38]To ensure feasibility, I limited this study to four campuses while making every effort to ensure a diverse institutional sample in terms of geographic location, enrollment size, sector (public versus private), and admission selectivity.
[39]Study launch dates, survey data collection, and intervention messages were scheduled according to the academic calendar at each site: January 2015 at campuses "A" and "B", and February 2015 at campuses "C" and "D".

In total, 20,289 undergraduates across the four study sites were randomly selected to participate in the baseline survey. To be included in the baseline recruitment sample, students had to be enrolled in a bachelor degree program, had to be at least 18 years of age, and could not be studying abroad or on leave during the 2015 winter/spring semester. There were no other inclusion or exclusion criteria for baseline survey recruitment in Study #1.

Prior to the study launch, each campus identified a local study coordinator who assisted with customization of materials (e.g., brochures with campus-specific eating disorder resources) and acquisition of administrative records (*see Data*).[40] The local coordinators are leaders within the counseling centers and/or offices of student life on their campuses. Free, in-person mental health services are available on all of the study sites, including at least one counselor specializing in eating disorder treatment. Each participating campus has a triage system to ensure timely delivery of care to students with the most urgent need. The sites also make referrals to local providers when on-campus capacity is reached. After completing Study #1, I provided the local study coordinators with customized, de-identified data reports, which included key findings in terms of prevalence (i.e., need based on overall symptom levels among the full sample of baseline responders on their campus), service utilization, and other measures included in the surveys.

The post-intervention, one-on-one qualitative interviews were conducted in May 2015 at campus “A”. In the 12-week follow-up survey for Study #1, students from campus “A” were asked if they would be willing to participate in a brief (approximately

[40]Given my leadership of the study, there was no need for a local coordinator at campus “A”. As such, there were three local coordinators (one for each of the other sites in Study #1).

30-minute), semi-structured interview about their experience participating in the intervention.[41] Students who indicated willingness to participate were entered into the interview subject pool and were then separated into two groups: (1) those who reported seeking help during the 12-week intervention, and (2) those who did not report seeking help during the 12-week intervention. Separately within each group and by intervention condition (*see Factorial Design, Study #1*), I randomly selected five students to invite for interviews, resulting in a final interview sample of 10 students.

Study #2 was conducted during the 2015 fall semester (September-December), with 8,000 undergraduates from campus "A" recruited for the baseline survey. To be included in the baseline recruitment sample, students had to be enrolled in bachelor degree programs, had to be at least 18 years of age, could not be studying abroad or on leave during the 2015 fall semester, and could not be from the campus "A" recruitment sample from Study #1 (N=10,000). There were no other inclusion or exclusion criteria for baseline survey recruitment in Study #2.

All research was approved by the University of Michigan Health Sciences and Behavioral Sciences Institutional Review Board (IRB), which served as the central review board. IRB approval was also obtained from each of the other three sites in Study #1. A Certificate of Confidentiality issued by the National Institutes of Health provided further protections.

Student Recruitment. In both Studies #1 and #2, students were introduced to the study via email pre-notification, which described the research objectives and

[41]The 12-week follow-up survey at campus "A" included the following item: "For the final stage of this research, the Healthy Bodies Team will be interviewing some UM students regarding experiences with this program and thoughts about services and help-seeking for eating and body image concerns. Interview subjects will receive a $20 participation stipend. Would you be willing to be interviewed?" Response options were "yes" and "no".

confidential nature of data collection.[42] Three or four days later, students received the official recruitment email, which contained a unique link to the baseline survey. After clicking this link, students were presented with an online consent form and voluntarily agreed to participate before entering the baseline survey. To engage baseline non-responders, I sent up to three reminders over the approximately 10-day baseline data collection period. All students recruited for the baseline survey were informed in the emails and consent form that they would be entered in a drawing for one of 10 $50 gift cards (in Study #1) and one of two $50 gift cards (in Study #2).[43] On average, the baseline survey took students roughly 10 minutes to complete in both Studies #1 and #2.

Study #1 included two follow-up surveys (at six- and 12-weeks post-baseline) while Study #2 included one follow-up survey (at 12-weeks post-baseline). Follow-up surveys were administered only to students who met intervention criteria at baseline (*see Intervention Criteria*). As in the baseline survey, follow-up survey recruitment was conducted entirely via email. Upon entering the follow-up survey, students were presented with the following message: "Welcome to the [six/12]-week follow-up assessment! Participation is completely voluntary and responses are strictly confidential. As a reminder, you previously consented to the terms described HERE [link to PDF of consent form]". On average, the six-week follow-up took five minutes to complete (in Study #1) and the 12-week follow-up took nine minutes to complete (in both Studies #1 and #2). In Study #1, students who met intervention criteria at baseline

[42]Survey methodologists have concluded that this initial notification can boost participation rates (Crawford, 2001).
[43]Students were eligible for the baseline drawing regardless of participation, as noted in the consent form: "All students in the sample at all participating institutions will be eligible to win, regardless of participation".

and completed both follow-ups received a $15 gift card after completing the final assessment. In Study #2, students who met intervention criteria at baseline and completed the follow-up survey received a $10 gift card.[44]

Intervention Criteria. Intervention criteria were designed to identify students with unmet need for eating disorder treatment. Criteria were the same in Study #1 and Study #2. Contingent on voluntary participation in the baseline survey, there were three criteria for inclusion in the intervention: (1) students had to have significant symptoms of an eating disorder; (2) these symptoms had to be untreated/undiagnosed; and (3) students had to have a body mass index (BMI) of greater than 17, calculated based on their self-reported height and weight.[45] All three criteria had to be met for students to be invited into the intervention.

Students were classified as having significant symptoms of an eating disorder if one or more of the following criterion were met: SCOFF score greater than or equal to three; Weight Concerns Scale (WCS) score greater than or equal to 59; frequent binging (eight or more episodes of eating "an unusually large amount of food" accompanied by a "sense of loss of control" in the past month); or frequent purging (eight or more episodes of compensatory vomiting, laxative use, diuretic use, and/or compulsive exercise in the past month). The SCOFF is an empirically-validated, five-item screen, with scores ranging from zero to five (Morgan et al., 1999). A score of

[44]I offered slightly lower participation incentives in Study #2 due to lack of funding. I had not intended to run a second study of the intervention but, based on findings from Study #1, it became clear that a second study would be a valuable contribution to overall project and I used all remaining funds to support Study #2.

[45]Having a BMI of 17 or under is a widely-used (albeit crude) cutoff for identifying subjects with likely cases of AN. As agreed upon by the University of Michigan IRB and the NIMH Human Research Protections Unit, students with a BMI of 17 or under were considered to be above the symptom threshold. These students were given a clinical referral at the end of the baseline survey and were not invited into the intervention.

greater than or equal to two is typically considered a positive screen and has been shown to be both sensitive (72-100%) and specific (73-94%) for identifying likely cases of AN and BN (Luck et al., 2002; Morgan et al., 1999). In the present study, students had to have a SCOFF score of greater than or equal to three in order to be invited into the intervention; this cutoff has been shown to yield fewer false positives in at least one campus-based study (Cotton et al., 2003).[46]

The WCS is commonly used to assess body image concerns and to identify individuals at risk for an eating disorder (Killen et al., 1994; Killen et al., 1996). Scores range from zero to 100, with higher scores indicating higher levels of concern. A score of greater than or equal to 47 signals a likely eating disorder. In the present study, students had to have a WCS score of greater than or equal to 59 in order to be invited into the intervention. This cutoff has been shown to be sensitive and specific for eating disorders: AN (0.90, 0.99), BN (0.82, 0.88), and BED (0.78, 0.82) (Lipson et al., *in press*). I chose to use higher thresholds for both the SCOFF and WCS in the present study because the intervention was designed to promote treatment utilization for students with clinically significant symptom levels.

Symptoms were considered untreated/undiagnosed if both of the following were true: students had no lifetime eating disorder diagnosis and students were not currently receiving eating disorder counseling/therapy.

[46]One study of the SCOFF found a positive likelihood ratio of 11 when using the threshold of three (Cotton, Ball, & Robinson, 2003), as compared to a positive likelihood ratio of six when using the threshold of two (Parker, Lyons, & Bonner, 2005).

Within the baseline surveys, I programmed algorithms to calculate BMI,[47] SCOFF score, and WCS score, as well as to classify responders based on prior lifetime diagnoses and current eating disorder treatment status. These algorithms allowed students to be categorized, immediately upon completing the final item of the baseline assessment, as either above, at, or below the intervention threshold.

Intervention Components. In the present intervention, the goal was to engender urgency and combat inertia surrounding help-seeking. To do so, the intervention recognized three key cognitive biases: (1) the default bias (individuals "go with the flow" of preset options) (Loewenstein, Brennan, & Volpp, 2007); (2) the comparison bias (individuals tend to behave based on inaccurate perceptions of themselves relative to other people in their environment) (Garcia et al., 2010); and (3) the sign effect (losses (negative outcomes) are substantially more psychologically costly than gains (positive outcomes) of equal magnitude) (Angner, 2012).

In Study #1 (the randomized factorial design study), students who met the intervention criteria received a randomly assigned combination of three intervention components operationalized in the weekly email messages: default (opt-in versus opt-out), peer comparison (on versus off), and sign (loss versus gain). In Study #2 (the RCT), for students with untreated symptoms who were randomly assigned to the intervention condition, the messages included three components: opt-out, peer comparison on, and loss. Students in the control condition of Study #2 did not receive any messages. These components are described in more detail below.

[47]To calculate BMI, I followed four standard steps: (1) multiplied reported weight in pounds by the metric conversion factor of 0.45; (2) multiplied reported height in inches by the metric conversion factor of 0.025; (3) squared the value from step 2; and (4) divided the value from step 1 by the value from step 3. Students with BMI $\leq$17 were classified as above the intervention threshold.

(1) *Default Bias:* In Study #1, students in conditions A-D were positioned to opt-out of receiving treatment linkage. In Study #2, students in the intervention condition were positioned to opt-out of receiving treatment linkage. The first week's message began with an introduction to the intervention, followed by the text: "You will receive a weekly email containing information about resources for eating and body image concerns. You may opt-out of receiving emails at any time". Each week these students were able to check a box at the bottom of the email to opt-out of future messages (though students were not explicitly reminded of this option after the first week). Those students who "went with the flow" (i.e., did not check the opt-out box) received a weekly email for the duration of the intervention. In Study #1, students in conditions E-H were positioned to opt-in to treatment linkage and had to take purposeful action to receive weekly emails. Only those students who actively opted-in (by clicking an opt-in link in the email), received on-going treatment linkage.[48] In analyzing the results of Study #1, changes in outcomes are compared for students in the opt-out versus opt-in conditions.

(2) *Comparison Bias:* Students in comparison on conditions (in Study #1) and students in the intervention condition (in Study #2) were shown how their eating disorder symptoms (baseline scores on the SCOFF and WCS) compared with average

[48]In Study #1, for students in opt-in conditions, the opportunity to opt-in was staggered over the first three weeks of the study. A randomly selected one-third of all students assigned to conditions E-H were asked to opt-in at week 1 in order to receive messages in the subsequent weeks. In week 1, the remaining two-thirds of students in conditions E, F, G, and H received the same message as those students in conditions A, B, C, and D, respectively. A randomly selected one-third of all students assigned to conditions E-H were asked to opt-in at week 2 in order to receive messages in the subsequent weeks. In week 2, the remaining one-third of students in conditions E, F, G, and H received the same messages as conditions A, B, C, and D, respectively. Finally, a randomly selected one-third of all students assigned to conditions E-H were asked to opt-in at week 3 in order to receive messages in the subsequent weeks. Students in conditions E-H who did not opt-in after the week 1-3 messages were not sent messages until week 7 (after the six-week follow-up survey), at which point they were given one last opportunity to opt-in for weeks 8-12. After students from E, F, G, or H opted-in (either at week 1, 2, 3, or 7), they effectively become part of conditions A, B, C, or D, respectively, for the remainder of the study.

symptom levels among other undergraduates (with gender-specific norming data drawn from HBS) (e.g., “On average, your peers have much lower WCS scores than you. In a recent study of [703 undergraduate women/320 undergraduate men/1,033 undergraduates] the average score was [39.7/28.2/34.2]. You appear to be struggling with these issues more than other students. With this in mind, we hope that you’ll consider the importance of seeking help now.”).[49] In analyzing the results of Study #1, changes in outcomes are compared for students in the comparison on versus off conditions.

(3) *Sign Effect:* Finally, students in loss conditions (in Study #1) and students in the intervention condition (in Study #2) received messages focused on the negative consequences of untreated eating disorders (e.g., “It is important to identify and support students with eating disorder symptoms because there are serious short- and long-term negative health consequences associated with these symptoms. Short-term consequences include hair loss/thinning, while long-term effects include muscle weakness and bone loss. In other words, not seeking help creates increased risk for significant health problems, now and in the future”). In Study #1, students in gain conditions received messages emphasizing the benefits of treatment and recovery (e.g., “Fears about food and weight create increased risk for developing an eating disorder. Without these negative thoughts it is possible to focus more on all of the social and academic experiences that make college such a special time. Creating and maintaining a healthy and positive attitude related to eating and body image can be

[49]Note that in both Studies #1 and #2, in order to be in the intervention, students had to have highly elevated eating disorder symptoms. On the SCOFF, for example, students had to have a score of $\geq$3, which is above the cutoff for a positive screen ($\geq$2) (Morgan, Reid, & Lacey, 1999). Even the lowest score eligible for the intervention (3) was much higher than the national average in HBS: 0.9 for female undergraduates and 0.5 for male undergraduates.

difficult and help is commonly needed. The sooner you address any concerns, the sooner you can fully embrace all the opportunities available to you.”). In analyzing the results of Study #1, changes in outcomes are compared for students in loss versus gain conditions.[50]

Intervention Message Content. As explained above, the interventions administered in Studies #1 and #2 involved weekly messages over the course of 12 weeks. All messages encouraged help-seeking and provided information about local eating disorder resources, including links to a campus-specific PDF containing detailed descriptions of all available options. While the exact content varied from week to week, messages in Study #1 were organized into seven overall segments: (1) personalized greeting (e.g., “Hi there, [first name]”); (2) introductory sentence (e.g., “Thank you for your continued participation in the 12-week program designed to help [name of school] students take advantage of available services for eating and body image concerns. We are now in the [#] week of the program and are writing to provide important information that we hope you will consider.”); (3) the benefits of eating disorder treatment (for students in gain conditions) (e.g., “Fears about food and weight create increased risk for developing an eating disorder. Without these negative thoughts it is possible to focus more on all of the social and academic experiences that make college such a special time. Creating and maintaining a healthy and positive attitude related to eating and body image can be difficult and help is commonly needed. The sooner you address any concerns, the sooner you can fully embrace all the

[50]Some research has found that gain-framed messages are more effective for illness prevention while loss-framed messages are more effective for illness detection (Gallagher & Updegraff, 2012; Rothman & Salovey, 1997). As with all intervention components tested here, it is an empirical question as to whether effects will differ between loss and gain conditions.

opportunities available to you") or the negative consequences of untreated eating disorders (for students in loss conditions) (e.g., for those who reported purging behavior at baseline: "Purging behaviors—vomiting, laxative abuse, diuretics, excessive exercise, etc.—can be dangerous and lead to serious medical complications. Some of the health consequences of these behaviors include: inflammation and possible rupture of the esophagus from vomiting, tooth decay and staining from stomach acids released during vomiting, chronic irregular bowel movements and constipation, peptic ulcers and pancreatitis, and electrolyte imbalances that can lead to irregular heartbeats and possibly heart failure"); (4) gender-specific relative risk information (for students in comparison on conditions); (5) brief reiteration of the importance of seeking help (e.g., "Given the information above, we urge students in need to take advantage of available services as soon as possible.") followed by a customized list of local resources and a link to the aforementioned PDF; (6) valediction;[51] and (7) disclaimer and emergency contact information (e.g., "Please note that this email address is not monitored 24/7 and is not monitored by mental health clinicians/counselors. Contact information for mental health services on your campus is included above. If you need help after normal business hours, call [#]"). In Study #2, intervention messages were organized the same way as in Study #1, though the benefits of treatment were not communicated (given that there was no gain condition). The full text of all intervention messages from Study #1 is included in the appendix (*see* ***Table A2***).

Data and Measures

[51]In Studies #1 and #2, to account for the fact that students could have sought help during the preceding week(s), the messages in weeks 2-12 also included the following brief statement before the valediction: "If you have recently begun receiving services, we hope this has been helpful and continues to be."

Data. Data reported on in this chapter come from three sources: (1) baseline and 12-week follow-up surveys in Studies #1 and #2;[52] (2) qualitative interviews (audio recordings); and (3) institutional records provided by Registrars at each of the study sites. All outcomes are drawn from students' self-reported survey data. In Studies #1 and #2, students' self-report survey data were collected through Qualtrics; all surveys were accessible by computer and Smartphone.

Institutional data were used primarily for the purposes of survey recruitment and non-response analysis (i.e., understanding study attrition (*see* ***Table A4***)). Before the baseline survey, Registrars at each campus provided the following information for all students included in the initial recruitment sample: first name, email address, age, sex, race/ethnicity, GPA, citizenship, field of study, program year, and financial aid (Pell Grant) status.[53]

Measures. This section describes covariates and outcomes for Studies #1 and #2. Definitions and operationalizations of outcomes are also included in the appendix (*see* ***Table A3***).

Covariates: The following nine baseline individual characteristics are accounted for as covariates (*see Statistical Analysis*): (1) age (18-20 versus 21 or older); (2) gender (female versus male); (3) sexuality (heterosexual versus queer); (4) race/ethnicity (dummy variables for white, black, Latino/a, Asian, other); (5) citizenship (U.S. citizen versus international student); (6) Pell Grant status (as a proxy for

[52]Many of the results presented in this chapter are described in the context of both Study #1 and Study #2. Both studies included baseline and 12-week follow-up surveys. Only Study #1 included a six-week follow-up survey. In this chapter, I focus on data from the baseline and 12-week follow-up surveys (but not from the six-week follow-up survey) in Study #1 to allow for clearer comparisons with Study #2.
[53]Obtaining the institutional data described above is permissible under the guidelines of the Family Education Right and Privacy Act.

socioeconomic status);[54] (7) housing (on-campus versus off-campus); (8) program year (first/second year versus third year or higher); and (9) GPA (high (≥3.5) versus low (<3.5)).

Dependent Variables: As mentioned, the primary outcomes are related to help-seeking attitudes and behaviors. Specifically, analyses focus on four primary outcomes, all operationalized as binary measures: (1) any eating disorder treatment in the past six weeks; (2) perceived need for eating disorder treatment; (3) consideration of eating disorder treatment in the past six weeks; and (4) plans to seek eating disorder treatment. Based on embedded skip logic within the online survey, consideration of and plans to seek treatment were only asked of students who reported no treatment in the past six weeks. It should be noted that the main outcome of interest—any eating disorder treatment in the past six weeks—reflects an emphasis on treatment linkage as opposed to other measures of help-seeking behavior such as treatment adherence over time.

Statistical Analysis

The analytic approach described below is intended to assess main effects of individual intervention components in Study #1 as well as overall efficacy of the intervention in Study #1 (by examining effects over the 12-week study period among all students in the intervention) and in Study #2 (by examining effects over the 12-week study period among students in the intervention condition relative to students in the

[54]Including Pell Grant status in the analyses is important as a proxy for socioeconomic status and is further relevant to mental health; an emerging body of research documents a strong link between financial strain, stress related to financial strain, and mental health (Selenko & Batinic, 2011; Walsemann, Gee, & Gentile, 2015).

control condition). Survey data are analyzed at the individual level. All analyses were conducted using Stata 12.1.

Factorial Design, Study #1. Factorial designs are ideal when research questions call for assessing effects of intervention components. By “recycling” subjects (i.e., placing every subject in one of the levels of each factor), factorial designs provide the most efficient method for simultaneously examining individual factors (Collins, Dziak, & Li, 2009). This means that factorial designs can include fewer subjects than comparable alternatives while maintaining the same level of statistical power (Collins et al., 2009). Factorial designs are well established and have been used in many other fields to optimize interventions, including for smoking cessation, substance abuse, HIV prevention, and obesity (Baker et al., 2011; Caldwell et al., 2012; Kumar et al., 2013; Wyrick, Wyrick, Bibeau, & Fearnow-Kenney, 2001).

In Study #1, I test three factors (otherwise referred to as “intervention components”) hypothesized, based on theory and empirical evidence, to affect eating disorder help-seeking among undergraduates: (1) default, (2) peer comparison, and (3) sign. As noted above, each of the three factors had two levels: default (opt-in versus opt-out), peer comparison (on versus off), and sign (loss versus gain). Systematically varying the levels of these factors yielded a balanced 2x2x2 factorial with eight experimental conditions (A-H) (*see* ***Table 12***). The intervention conditions were as follows: A (opt-out, peer comparison on, loss); B (opt-out, peer comparison on, gain); C (opt-out, peer comparison off, loss); D (opt-out, peer comparison off, gain); E (opt-in, peer comparison on, loss); F (opt-in, peer comparison on, gain); G (opt-in, peer

comparison off, loss); and H (opt-in, peer comparison off, gain). The balanced factorial design was sized to detect main effects of the three intervention components.

RCT, Study #2. As described above, Study #2 is a single-campus RCT, with half of students randomized to the intervention condition (opt-out, comparison on, loss) and half randomized to the control condition. Students with untreated eating disorder symptoms (as identified in the baseline survey) who were randomly assigned to the intervention condition received weekly emails encouraging help-seeking and were asked to complete a 12-week follow-up survey; students with untreated symptoms in the control condition were asked to complete a 12-week follow-up survey but did not receive any intervention messages. In this way, Study #2 allows for estimation of the "natural rate" of help-seeking over 12 weeks with no intervention (i.e., the proportion of students with eating disorder symptoms who would seek help over this time period without any deliberate treatment linkage effort).[55] Estimating the "natural rate" of help-seeking in the control condition provides important context for interpreting the overall intervention effects on eating disorder treatment linkage from Study #1.

Bivariate Analyses. In the bivariate (unadjusted) analyses, I calculate unadjusted percentages for all outcomes at baseline and 12-week follow-up stratified by intervention condition. For Study #1, I examine differences within and across three conditions (opt-in versus opt-out, comparison on versus comparison off, loss versus gain) and for Study #2, I examine differences within and across one condition

[55]In Study #1, students in all eight conditions (A-H) received at least some form of intervention. Even in what would be considered by factorial design standards to be the "control" (i.e., all factors "off")—condition H (opt-in, comparison off, gain)—students still received at least two weekly messages encouraging help-seeking (i.e., there was no "pure" control condition in Study #1). That all students received some form of intervention in Study #1 is not an oversight, rather a limitation of factorial designs in this context.

(intervention versus control). From these analyses, I report statistically significant differences in two ways: (1) baseline to 12-week follow-up within the same level of a given condition (e.g., in Study #1, from baseline to 12-week follow-up among students in the opt-out conditions; in Study #2, from baseline to 12-week follow-up among students in the intervention condition); and (2) at 12-week follow-up within different levels of the same condition (e.g., in Study #1, opt-out versus opt-in; in Study #2, intervention versus control). I report statistical significance from two-sample z-tests of proportions. For Study #1, I also examine overall intervention effects (combining all students in the intervention), reporting percentages at baseline and 12-week follow-up with statistical significance from two-sample z-tests of proportions.

Multivariate Analyses by Intervention Condition. For each of the outcomes, I estimate a logistic regression where subscript *b* denotes a measurement at baseline and subscript *12* denotes a measurement at 12-week follow-up:

$$\ln\left(\frac{\Pr(Y_{12})}{1-\Pr(Y_{12})}\right) = \beta_0 + \beta_1 Y_b + \beta_2 Sx_b + \beta_3 Chars_b + \beta_4 Campus_b + \beta_5 Default_b + \beta_6 PeerNorms_b + \beta_7 Sign_b + \varepsilon_{12} \qquad [1a]$$

$$\ln\left(\frac{\Pr(Y_{12})}{1-\Pr(Y_{12})}\right) = \beta_0 + \beta_1 Y_b + \beta_2 Sx_b + \beta_3 Chars_b + \beta_4 Campus_b + \beta_5 A_b + \beta_6 B_b + \beta_7 C_b + \beta_8 D_b + \beta_9 E_b + \beta_{10} F_b + \beta_{11} G_b + \beta_{12} H_b + \varepsilon_{12} \qquad [1b]$$

$$ln\left(\frac{Pr\ (Y_{12})}{1 - Pr(Y_{12})}\right) = \beta_0 + \beta_1 Y_b + \beta_2 Sx_b + \beta_3 Chars_b + \beta_4 Intervention_b + \varepsilon_{12} \qquad [2]$$

In each of these models, I control for the following: baseline response (Y_b) to the outcome (Y_{12}); baseline eating disorder symptoms (Sx_b);[56] a vector of baseline individual characteristics (age (18-20 versus 21 or older), gender (female versus male), race/ethnicity (dummy variables for white, black, Latino/a, Asian, other), and GPA (high (≥3.5) versus low (<3.5)) ($Chars_b$); and, for Study #1, campus (dummy variables for

[56]Baseline eating disorders symptoms are operationalized as "very high symptoms" where 1=SCOFF>4 and/or WCS>80 and 0=SCOFF<4 and WCS<80.

each study site) ($Campus_b$). Equations 1a and 1b are used to estimate effects from Study #1, while equation 2 is used to estimate effects from Study #2.

In equation 1a, the key coefficients are on $Default_b$, $Comparison_b$, and $Sign_b$, which represent the main effect of each intervention condition in Study #1. Equation 1b estimates effects of each of the eight combinations of intervention conditions in Study #1 through interaction terms (A_b, B_b, C_b, D_b, E_b, F_b, G_b, H_b); for the models based on equation 1b, intervention condition H serves as the reference group. In equation 2, the key coefficient is on $Intervention_b$, which represents the main effect of the intervention in Study #2. I also examined heterogeneous intervention effects in both studies (through stratification and interaction terms of $Chars_b$ x intervention condition); there were no significant findings from these analyses (results not shown). All intervention effects are reported as odds ratios (ORs).

Analysis of Qualitative Interview Data. The 10 post-intervention qualitative interviews were conducted as sub-aim of Study #1. As mentioned above, half of interviewees had sought help during the 12-week intervention while the other half had not sought help. The objective of these one-on-one, semi-structured interviews was to understand students' experiences participating in the intervention and identify ways in which the intervention could be made more effective. Moving forward, the plan is to take what was learned in the interviews and use this information in concert with the main findings to optimize the intervention.

All interviews were audio-recorded. Interpretation of interview data focused on elucidating which aspects of the messages resonated with students and which did not, and what kinds of additional messages (or entirely new strategies) would potentially

increase help-seeking among students with untreated eating disorders. Audio recordings were reviewed multiple times to identify common themes. The interviews were then partially transcribed and quotes were selected that reflect the themes (*see Post-intervention Participant Reflections (qualitative interviews)*).

Participants

Participant Flow. In Study #1, the baseline survey was completed by 4,697 students for an overall response rate of 23.2%. Approximately one-third (33.2%) of baseline responders met criteria for having significant symptoms of an eating disorder, just 6.8% of whom had received recent treatment; this equates to a treatment gap of 93.2% in the overall sample of baseline responders. As mentioned, in order to be included in the intervention, students' eating disorder symptoms had to be untreated at baseline, defined as no current counseling/therapy and no lifetime diagnosis. Roughly one quarter (24.5%) of baseline responders met criteria for the intervention. Response rates were 54.8% and 53.5% for the six- and 12-week follow-up surveys, respectively. The primary analytic sample is comprised of 615 students in the intervention sample with baseline and 12-week follow-up data (*see* ***Figure 5a***).[57]

In Study #2, the baseline survey was completed by 1,930 students for an overall response rate of 24.1%. Roughly one quarter (22.1%) of baseline responders met criteria for the intervention. For the 12-week follow-up survey, the response rate was 62.8%. The primary analytic sample is comprised of 268 students in the intervention sample with baseline and 12-week follow-up data (*see* ***Figure 5b***).

[57]In Study #1, at baseline, of the 615 students in the intervention sample, 41 had received eating disorder treatment in the past year, 11 of whom had received treatment in the past six weeks. In other words, most students had received no treatment in the past year (93.3%) and an even greater majority had received no treatment in the past six weeks (98.2%).

To determine which student characteristics were associated with lower/higher likelihoods of survey participation, I created a binary outcome variable of survey participation at each time point. I then conducted logistic regressions controlling for age, gender, race/ethnicity, citizenship, and GPA. For regressions predicting follow-up response, I also controlled for severity of baseline eating disorder symptoms and intervention condition (dummy variables for opt-in versus opt-out, comparison on versus off, and loss versus gain for Study #1 and a binary variable of intervention versus control for Study #2). For these analyses, I linked survey data with institutional data, merging on a random "study ID" assigned to all students in the baseline recruitment samples. I also conducted analyses to examine sample attrition over the study periods for both Study #1 and Study #2 (*see* ***Table A4***).

In Study #1, the following characteristics were associated with higher odds of baseline participation relative to representation in the initial random recruitment sample: younger age (OR=1.1, p=0.001), female (OR=2.4, p<0.001), white (OR=1.1, p=0.03), and high GPAs (OR=1.4, p<0.001). The following characteristics were associated with lower odds of baseline participation relative to representation in the initial random recruitment sample: black (OR=0.8, p=0.02) and Asian (OR=0.8, p<0.001).[58] At six-week follow-up, the following characteristics were associated with higher odds of participation relative to the sample meeting intervention criteria: female (OR=2.5, p<0.001) and U.S. citizen (OR=1.7, p=0.09). At 12-week follow-up, females have higher

[58]For Study #1, in a sensitivity analysis controlling for Pell Grant recipient status (with data available at three of four study sites), white students no longer have significantly higher odds and black and Asian students no longer have significantly lower odds of baseline participation. Students receiving Pell Grants have slightly lower odds of participating (OR=0.9, p=0.09); younger age, being female, and having a high GPA remain significant positive predictors of baseline participation when controlling for Pell Grant recipient status.

odds off participating relative to their representation in the sample meeting intervention criteria (OR=2.5, $p<0.001$). Importantly, neither baseline eating disorder symptoms nor intervention condition were significant predictors of six or 12-week follow-up response.

In Study #2, the following characteristics were associated with higher odds of baseline participation relative to representation in the initial random recruitment sample: younger age (OR=1.6, $p=0.001$), female (OR=2.2, $p<0.001$), U.S. citizen (OR=1.4, $p=0.01$), and high GPAs (OR=1.1, $p=0.05$). At 12-week follow-up, students in the control condition had 1.8 times higher odds of participation relative to the sample meeting intervention criteria ($p=0.007$); there were no other significant predictors of 12-week follow-up response (including baseline eating disorder symptoms).

Finally, as expected due to randomization of intervention condition assignment, roughly half of students are in each level in Study #1: 47.6% opt-out versus 52.4% opt-in; 47.6% comparison on versus 52.4% comparison off; and 48.6% loss versus 51.4% gain. Furthermore, there is balance in baseline demographic characteristics across levels of the same conditions in Study #1 (i.e., opt-in versus opt-out, comparison on versus off, loss versus gain) (*see* ***Table A5***). The only significant exceptions are for: age 18-20 by sign (loss: 71.6%, gain: 63.9%, $p=0.04$); Latino/a by comparison (on: 5.8%, off: 2.5%, $p=0.04$); Pell Grant status by comparison (on: 31.3%, off: 21.3%, $p=0.04$); and heterosexual by default (opt-out: 90.4%, opt-in: 84.2%, $p=0.02$). Similarly, in Study #2, details, roughly half of students are in each condition: 45.5% intervention versus 54.5% control and there is balance in baseline demographic characteristics across conditions, the only exception being for age 18-20 (intervention: 61.5%, control: 48.0%, $p=0.03$) (*see* ***Table A5***).

Baseline Intervention Sample Characteristics. In Study #1, the analytic sample is comprised of 615 students who met baseline intervention criteria and completed the 12-week follow-up survey (*see* ***Table 13***). Within this sample, 67.6% are between the ages of 18-20 and 82.1% identity as female. The racial/ethnic breakdown is as follows: 74.6% white, 3.4% black, 4.1% Latino/a, 7.0% Asian, and 10.9% other race/ethnicity. About one in four students (26.3%) are Pell Grant recipients. The vast majority of students (95.0%) are U.S. citizens. Most students (87.2%) identify as straight (heterosexual). In terms of housing, 37.7% live in campus residence halls, 16.4% in campus apartments, 2.4% in fraternity/sorority houses, and 38.1% in off-campus (non-university) housing. Just under half of students (44.3%) are first- or second-years (i.e., freshmen or sophomores); 42.9% have GPAs of at least 3.5.

With regard to eating disorder symptoms, the most commonly met intervention criteria in Study #1 were elevated WCS scores, followed by purging, binging, and lastly elevated SCOFF scores. At baseline, over two-thirds of students in the intervention sample (65.5%) screened positive ($\geq$59) on the WCS (mean=61.4, SD=19.2) while less than one-quarter (24.2%) screened positive ($\geq$3) on the SCOFF (mean=1.6, SD=1.2). Over one-quarter (26.2%) engaged in frequent binging while nearly half (44.1%) engaged in compensatory purging behavior(s). Roughly one in five students (17.2%) had “very high symptoms”, as defined above. Over 90% of the intervention sample endorsed at least one impairment at baseline, as measured by the Clinical Impairment Assessment (CIA), a 16-item self-report measure of the severity of impairment due to eating disorders (Bohn & Fairburn, 2008). Students most commonly reported that their “eating habits, exercising, or feelings about eating, shape or weight” made them feel

critical (92.7%), upset (86.2%), ashamed (84.4%), worried (84.2%), and/or guilty (81.3%). CIA scores range from zero to 48, with higher scores indicative of higher levels of impairment (Bohn & Fairburn, 2008). At baseline, the mean CIA score for the intervention sample was 14.5 (SD=9.3), which is just below the clinical cut-off score of 16 (Bohn & Fairburn, 2008).

Consistent with findings presented in chapter 3, students in Study #1 with untreated symptoms at baseline most commonly reported not seeking help for reasons that imply a lack of urgency: "I have not had any need for counseling or therapy" (51.2%), "I prefer to deal with issues on my own" (38.9%), and "I question how serious my needs are" (32.6%). Likewise traditionally-emphasized barriers (as reviewed in chapter 2) were selected by only a small percentage of students: "I worry about what others will think of me" (1.4%), "I don't know what resources are available to me" (4.0%), and "There are financial reasons (too expensive, insurance won't cover what I need)" (7.7%).

In Study #1, the baseline survey also included brief measures of previously discussed concepts from behavioral economics, namely procrastination, future discounting, and peer comparison.[59] Findings from these items offer further evidence of the relevance of these concepts with regard to mental health symptoms and service utilization. Procrastination levels (as measured by four items adapted from Lay's Procrastination Scale (Lay, 1986))[60] were higher in the intervention sample than the

[59]Procrastination and future discounting are two concepts that have been measured in survey research. Other key concepts (e.g., default bias and social comparison bias) are more commonly assessed via natural and laboratory experiments. A basic measure of social comparison bias was included in the survey.

[60]In Study #1, the four procrastination items were: (1) "I often find myself performing tasks that I had intended to do days before"; (2) "I generally delay before starting on tasks I have to do"; (3) "I usually accomplish all the things I plan to do in a day"; and (4) "I am continually saying 'I'll do it tomorrow'".

non-intervention sample. That said, overall levels were high among baseline responders regardless of symptoms or service utilization, a finding aligned with research demonstrating the pervasiveness of procrastinatory tendencies in college populations (Day et al., 2000; Ellis & Knaus, 1979; Haycock, 1993; Hill et al., 1978; O'Brien, 2002; Onwuegbuzie & Jiao, 2000; Solomon & Rothblum, 1984; Wohl et al., 2010). A single item was used to estimate students' discount rate: "Imagine you have a choice between two prizes: Prize A: Receive $500 right now, Prize B: Receive $_____ one year from now. What amount of money (in dollars) would have to appear in the blank for Prize B to make it just as attractive as Prize A?" On average, students in the intervention sample indicated greater monetary values (i.e., higher future discounting) than baseline responders who did not meet intervention criteria. In terms of peer comparison, when asked how they perceived their disordered attitudes and behaviors relative to their peers, less than one-quarter (23.7%) of students in the intervention condition indicated that they were "a lot more" preoccupied with weight and body image than their other students; in reality, these students scored significantly higher on the eating disorder measures than their peers, providing some basic evidence of biased social comparison.

In Study #2, the analytic sample is comprised of 268 students who met baseline intervention criteria and completed the 12-week follow-up survey (*see* ***Table 13***). Within this sample, 54.1% are between the ages of 18-20 and 71.5% identity as female. The racial/ethnic breakdown is as follows: 71.6% white, 4.1% black, 4.5% Latino/a, 11.2% Asian, and 8.6% other race/ethnicity. The vast majority of students (95.9%) are U.S.

Response categories were as follows: 1="extremely unlike me"; 2="moderately unlike me"; 3="neutral"; 4="moderately like me"; and 5="extremely like me".

citizens. Just over half of students (52.6%) are first- or second-years and 28.4% have GPAs of at least 3.5.

With regard to eating disorder symptoms, the most commonly met intervention criteria in Study #2 were elevated WCS scores, followed by purging, binging, and lastly elevated SCOFF scores. At baseline, nearly two-thirds of students in the intervention sample (63.3%) screened positive ($\geq$59) on the WCS (mean=60.9, SD=19.0) while one-fifth (20.2%) screened positive ($\geq$3) on the SCOFF (mean=1.4, SD=1.2). Just under half (45.1%) engaged in compensatory purging behavior(s) while one in five (20.9%) engaged in frequent binging. Likewise roughly one in five students (18.7%) had "very high symptoms".

Consistent with findings presented in chapter 3 and similar to the barriers reported in Study #1, students in Study #2 with untreated symptoms at baseline most commonly reported not seeking help for reasons that imply a lack of urgency: "I have not had any need for counseling or therapy" (57.5%), "I prefer to deal with issues on my own" (36.6%), and "I question how serious my needs are" (34.0%). Likewise traditionally-emphasized barriers (as reviewed in chapter 2) were selected by only a small percentage of students: "I worry about what others will think of me" (1.9%), "I don't know what resources are available to me" (3.4%), and "There are financial reasons (too expensive, insurance won't cover what I need)" (7.1%).

Intervention Results

Intervention results are organized into five sections: (1) first, I describe unadjusted differences within and across conditions in the factorial design from Study #1 (*see Unadjusted Intervention Effects by Condition, Study #1*); (2) next, I report main

effects of each factor (equation 1a) and effects of each of the eight combinations of factors (equation 1b) from multivariate logistic regression models (*see Regression-adjusted Intervention Effects by Condition, Study #1*); (3) I then present overall intervention effects from bivariate analyses (*see Unadjusted Intervention Effects, Overall, Study #1*); (4) turning my attention to Study #2, I describe unadjusted intervention effects (*see Unadjusted Intervention Effects by Condition, Study #2*); and (5) finally, I report intervention effects from multivariate logistic regression models (equation 2) (*see Regression-adjusted Intervention Effects, Study #2*).

The first three sections focus on findings from Study #1 and the fourth and fifth sections focus on findings from Study #2. This organization follows the chronological progression of my work, which began with an emphasis on understanding which intervention components were most effective (i.e., main effects of individual factors in Study #1). As reported below, differences across conditions are quite small compared to the apparent overall effect of the intervention (i.e., I find significant effects on overall help-seeking behaviors and attitudes but few differences based on randomly assigned intervention condition). As such, the focus of my work shifted to understanding overall effects of the intervention. Given the lack of a control condition in Study #1, I then conducted Study #2 to assess effects of the overall intervention compared to a control condition.

Unadjusted Intervention Effects by Condition, Study #1. In bivariate analyses stratified by intervention condition, there are statistically significant differences from baseline to 12-week follow-up within levels of each condition for all outcomes in Study #1. For example, just 1.4% of students in opt-out conditions had received recent

treatment at baseline compared to 8.4% at 12-week follow-up ($p<0.001$). Within the loss condition, rates of perceived need increased from 12.7% at baseline to 18.7% at 12-week follow-up ($p=0.04$). There are also several statistically significant findings when examining outcomes at 12-week follow-up within different levels of the same condition. Notable differences include: plans to seek treatment for comparison on (17.5%) versus off (11.4%) ($p=0.03$) and consideration of treatment for loss (29.1%) versus gain (36.9%) ($p=0.04$) (*see Study #1, columns 1-15 in* ***Table 14***). There are no statistically significant differences in help-seeking behavior at 12-week follow-up within different levels of the same condition.

Regression-adjusted Intervention Effects by Condition, Study #1. In multivariate logistic regression models controlling for age, gender, race/ethnicity, GPA, campus, baseline eating disorder symptoms, and baseline response to the dependent variable, there are only a few statistically significant main effects of the individual intervention components (equation 1a) (*see Study #1, columns 1-3 in* ***Table 15***). Relative to students in comparison off conditions who had not sought help at 12-week follow-up, those in comparison on conditions have 1.8 times higher odds of having plans to seek treatment ($p=0.03$). From equation 1b, there are statistically significant effects for just one of the eight combinations of intervention conditions (operationalized through interaction terms) (*see Study #1, columns 4-10 in* ***Table 15***). Relative to non-help-seekers in condition H (opt-in, comparison off, gain), students in condition B (opt-out, comparison on, gain) have 2.3 times higher odds of having considered treatment ($p=0.03$) at 12-week follow-up.

Unadjusted Intervention Effects, Overall, Study #1. Within the overall intervention sample in Study #1, there are significant positive intervention effects from baseline to 12-week follow-up for all outcomes (*see Study #1, columns 16-17 in* ***Table 14***). Most notably, while just 1.8% of students had received treatment in the past six weeks at baseline, 7.7% had received treatment in the past six week at 12-week follow-up ($p<0.001$). Furthermore, nearly one in five students (18.6%) had either received treatment during the course of the 12-week intervention and/or had an upcoming appointment scheduled.[61] Relatedly, rates of perceived need for eating disorder treatment increased from 14.5% at baseline to 19.0% 12-week follow-up ($p=0.03$). Among students in the intervention sample with no recent treatment at 12-week follow-up, there were significant increases in consideration of (18.5% at baseline versus 33.1% at 12-week follow-up, $p<0.001$) and plans to utilize (4.4% at baseline versus 14.3% at 12-week follow-up, $p<0.001$) eating disorder treatment.

Unadjusted Intervention Effects by Condition, Study #2. In Study #2, 0.8% of students with untreated symptoms at baseline who were randomly assigned to the intervention condition had received eating disorder treatment in the past six weeks. At 12-week follow-up, 5.7% of these students had received treatment in the past six weeks. This is in comparison to the control condition, in which 2.1% of students had received eating disorder treatment in the past six weeks at baseline and just 2.7% had received treatment at follow-up. The very low "natural rate" of help-seeking behavior in the control condition provides further evidence in support of the intervention's

[61]Although the intervention was designed to promote initial treatment linkage (as opposed to adherence over time), data from Study #1 suggest that the majority of students who sought help did so on a continuous basis throughout the study period: at 12-week follow-up, 71.1% of help-seekers reported two or more treatment sessions in the past six weeks.

effectiveness, as described below. Over the course of the 12-week study, overall rates of perceived need increased for the intervention condition (from 8.2% at baseline to 11.5% at 12-week follow-up) and actually decreased for the control group (from 11.6% at baseline to 8.2% at 12-week follow-up), though these changes were not statistically significant within conditions from baseline to follow-up or across conditions at follow-up. There were significant positive effects on consideration of eating disorder treatment in the intervention condition (21.3%) relative to the control condition (9.6%) (p=0.007) (*see Study #2, columns 18-22 in* ***Table 14***).

Regression-adjusted Intervention Effects, Study #2. Findings from multivariate logistic regression models controlling for age, gender, race/ethnicity, GPA, baseline eating disorder symptoms, and baseline response to the dependent variable, reveal that the intervention in Study #2 significantly increased consideration of eating disorder treatment among students with untreated symptoms: relative to students in the control condition, students in the intervention have 2.5 times higher odds of having considered treatment at 12-week follow-up (p=0.02) (*see Study #1, column 11 in* ***Table 15***).

Post-intervention Participant Reflections (survey data), Study #1. The 12-week follow-up survey in Study #1 also included a small number of items designed to gather participants' overall reflections of the intervention in terms of usefulness, helpfulness, relevance, and satisfaction. The vast majority of students (88.8%) reported that they "completely" or "mostly" understood the purpose of the intervention; just 1.2% reported that they did not understand. Similarly over three-quarters of students (78.0%) felt that the messages were "very helpful", "helpful" or "somewhat helpful" in terms of

encouraging them to address their disordered behaviors and attitudes. When asked whether they “learned new information about available resources and services for eating and body image concerns”, 62.2% of students agreed, while just 7.1% disagreed. Interestingly, when asked whether the “weekly messages felt relevant”, 32.2% agreed while 20.8% disagreed; unsurprisingly, reported relevance and perceived need at follow-up were negatively correlated.

Post-intervention Participant Reflections (qualitative interviews). As described above, I conducted 10 post-intervention, one-on-one qualitative interviews with students from Study #1 about their experience participating in the intervention. Students’ comments emphasize four main themes in terms of the intervention’s influence on attitudes and behaviors related to help-seeking: (1) the intervention heightened perceptions of need; (2) the intervention motivated behavioral action among students with intentions to seek treatment; (3) the intervention’s convenient delivery was essential; and (4) making peer comparisons was an important and memorable component of the messages for students in comparison on conditions. These effects are interrelated and support many of the quantitative findings from students’ self-reported survey data.

Heightened Perceptions of Need: As in the survey data, qualitative interview data reveal that many students with apparent eating disorder symptoms had not sought help due to lack of perceived need or doubts about the severity of need. As reflected in the quotes below, several students noted that the intervention increased their perceived need for eating disorder treatment. Some participants pointed to specific aspects of the

intervention including the initial message after the baseline survey, which explained eligibility for the intervention based on symptom assessment.

> "When I took the first survey that kind of helped me cause I was sort of like "I don't know if this is actually an issue" and then having the survey kind of affirm that…you're high risk sort of was like "ok that's something that maybe I should act on". It was sort of surprising and made me think about it more often when the emails came to have that already in my head."—Participant #2 (intervention condition H; sought help)

> "I kind of have known that I've had these issues kind of like indirectly for a while but then seeing it get named by a survey, it was kind of like "oh, hmmmm", in terms of like validating this is a noticeable issue…like "you should do something about this"…it kind of helped it be more of a priority….it seemed like the right call to go forward and meet with someone and start seeking help."—Participant #3 (intervention condition A; sought help)

> "I've thought about my eating a lot before and body image and stuff and I just never really like took a survey on it, ya know? So it did make me realize "oh this is kind of a scary thing" but yeah basically I just kind of had to like face it more and confront it…it was definitely on my mind like a lot."—Participant #4 (intervention condition A; did not seek help)

> "I confronted that I might have an eating disorder."—Participant #1 (intervention condition A; did not seek help)

From Help-seeking Intentions to Actions: As reflected in the quotes below, several students noted that the intervention motivated them to prioritize help-seeking; in several cases students explicitly mentioned how the intervention allowed them to overcome procrastination in this regard.

> "It sort of kept me aware cause I think it's easy to like just sort of push certain things off to the side and not really think about them especially when it's…easy to just you know focus on other things and not think about like "ok, this isn't healthy for me"….It was a good level of awareness of being like "oh man, I need to do something"."—Participant #6 (intervention condition D; did not seek help)

> "I'd been thinking about going to CAPS for a couple months but then getting the constant reminders was helpful to actually go."—Participant #5 (intervention condition F; sought help)

> "I'd been kind of thinking about seeking help actually for a while, so it was just kind of like a reminder, like "Oh yeah, I really do need to like get that started", and I eventually did start seeing someone."—Participant #3 (intervention condition A; sought help)

> "It was kind of more of like an affirmation kind of thing, like "ok this is something that I should be working on, like I can't get distracted from this despite the fact that I have all this schoolwork, or this essay to write, or I have to go to work or something". It did, I think to a degree, help galvanize me into actually making a step forward."—Participant #3 (intervention condition A; sought help)

Convenience: When asked about their experience in the intervention, several students commented on how convenient it was to participate and how important this was for their initial and sustained engagement throughout the 12-week period.

> "I've been meaning to do this and everything was right there that you needed if you were gonna call. I saw the nutritionist…the number was right there for me to do that."—Participant #2 (intervention condition H; sought help)

> "I was already kind of concerned about my eating habits and I was curious to find out more about it, so I was like "one more email each week, not bad"."—Participant #7 (intervention condition G; did not seek help)

> "In the emails, there's a concrete way to contact them so you don't have to try and look it up or find stuff out, it's like "here's the number, here's the building, their email type thing." So it's like nice to have it right there if you want to take advantage it."—Participant #8 (intervention condition B; did not seek help)

Making Peer Comparisons: Several students in the peer comparison on conditions made specific reference to the impact of these comparisons on their attitudes and behaviors.

> "Using that comparison I was in a bad place…and I remember that…It wasn't necessarily shocking but it was like surprising reading that and I mean I told my boyfriend and he was like "I told you"….Yeah that language just like reminded me about where I was at…it didn't necessarily like push me to CAPS…but it was like "wow, like I didn't know it was that bad of a thing"….It was helpful to know I guess and then like do something about it."—Participant #5 (intervention condition F; sought help)

> "Made it hit home a little bit more…I think cause like if it's a broad or general statistic, I think it's easier to be like "whatever" but if it's a smaller group of people and you're told you're above normal, it's harder to sweep that away…I'm more inclined to be like "oh, ok that's something to address". So I definitely I do think that was useful."—Participant #3 (intervention condition A; sought help)

> "A score that's not normal, I think maybe like validates it a little more or like validates your feelings that like 'oh maybe this is an issue'….because sometimes you're like "Oh I don't know, I'll get over this" but I think realizing that not everybody always feels this way is like maybe helpful. That was definitely like helpful for me."—Participant #9 (intervention condition B; sought help)

Themes emerging from the qualitative interviews are consistent with findings from the self-reported survey data in terms of the intervention's modest effects on students' attitudes and behaviors around eating disorder treatment utilization.

Limitations

Intervention results should be interpreted in the context of five key limitations. First, response rates were far from perfect: 24.5% in Study #1 and 24.1% in Study #2 at baseline and 53.5% in Study #1 and 62.8% in Study #2 at 12-week follow-up. These response rates are comparable with or higher than many other population-level survey studies of college student mental health (e.g., Haas, 2008; King et al., 2015). In the appendix, I also present results from an analysis of sample attrition over the study period (*see* ***Table A4***).

Second, symptoms of eating disorders were assessed using brief, self-reported instruments (SCOFF, WCS). Although these instruments have been validated and widely used, it is important to note that positive screens are correlated with but not equivalent to clinical diagnoses (i.e., some of the positive screens would not meet diagnostic criteria). This limitation was partially addressed by setting a higher threshold

of symptom severity in the present study. SCOFF scores of greater than or equal to two (Luck et al., 2002; Morgan et al., 1999) and WCS scores of greater than or equal to 47 (Killen et al., 1994; Killen et al., 1996) are typically considered positive screens; to be included in the present intervention, students had to have SCOFF scores of greater than or equal to three and WCS scores of greater than or equal to 59. That said, there were certainly some students invited into the intervention would not meet diagnostic criteria or necessarily need clinical treatment.

Third, it is important to note that multiple hypotheses were tested, introducing the possibility of false positives. Significant differences across conditions in Study #1 are particularly susceptible to type I error without appropriate adjustments and should be viewed as exploratory.

Fourth, Study #2 was conducted on a single campus, raising the question of whether those findings (particularly for the control condition) can reasonably be put in conversation with findings from Study #1 (i.e., that the very low “natural rate” of help-seeking from Study #2 can support the assumption that most of the students in the intervention conditions who sought help over the course of 12 weeks (7.7% in Study #1) would not have done so without the intervention). To address this, I replicated the bivariate analyses of overall intervention effects for Study #1, stratified by study site, and found that changes in outcomes were highly consistent across sites. Additionally, the campus dummy variables in multivariate logistic regression models were not significant predictors of outcomes in Study #1 (i.e., intervention effects do not appear to have been driven by institutional-level factors). The only exception was for plans to seek treatment (campus “C” OR=2.95, p=0.04).

Finally, as in most studies of mental health help-seeking interventions, the timing of follow-up data collection (12 weeks) may be insufficient for capturing effects on certain outcomes, particularly behavioral outcomes (e.g., service utilization). In this way, results should be interpreted as initial effects on treatment linkage.

Discussion

Consistent with prior research in college populations, results from the present studies indicate that the vast majority of students with apparent eating disorders are not receiving treatment. Prior research has shown that eating disorder symptoms are highly persistent over time (Eisenberg et al., 2011b) and typically become more severe if left untreated (Becker et al., 2004; Fichter et al., 2006). As such, early detection and treatment of eating disorders is of critical importance, particularly among college students, which represent a large, epidemiologically vulnerable population.

In an effort to narrow the eating disorder treatment gap on college campuses, I piloted two intervention studies designed to identify students with significant, untreated symptoms and promote help-seeking behavior by engendering a sense of urgency and facilitating the link to treatment via electronic messaging. Study #1, a randomized factorial design with three intervention components, was administered on four campuses to a diverse sample of 615 students. Effects from the specific intervention components were quite small compared to the overall effect of the intervention. Thus the discussion below focuses on key findings from the overall intervention in Study #1 as well as from Study #2, a single-campus RCT with a primary analytic sample of 268 students.

Findings from both studies suggest that the intervention had some significant positive effects on help-seeking behaviors and attitudes. Though modest, effects on help-seeking behavior are particularly promising given that this behavior is rarely affected (if measured at all) in campus-based help-seeking intervention studies (*see* ***Table 1***). Most notably, 7.7% of students in Study #1 had received recent eating disorder treatment at 12-week follow-up, representing a more than three-fold increase in help-seeking behavior over the course of the study. Evidence from Study #2 reveals that very few students with apparent unmet need will seek treatment on their own (i.e., the "natural rate" of help-seeking for eating disorders was extremely low in this sample); at 12-week follow-up, just 2.7% of students in the control condition had received treatment in the past six weeks (up only slightly from 2.1% at baseline). Though there were statistically significant overall effects on treatment utilization in both studies, it is important to note that over 90% of students in the interventions were still untreated after 12 weeks.

In addition to promoting modest increases in help-seeking behavior, the interventions had significant positive effects on a number of important attitudinal outcomes. In Study #1, overall rates of perceived need increased from 14.5% at baseline to 19.0% at 12-week follow-up. Rates of perceived need, like help-seeking behavior, do not appear to increase without intervention; among students in the control condition in Study #2, perceived need actually decreased slightly over the 12-week study period, even among students with very high symptoms.

Even for students who did not utilize suggested resources during the course of the intervention, there were significant increases in consideration of and plans to seek

eating disorder treatment. In Study #1, 18.5% of students had considered treatment at baseline compared to 33.1% at follow-up. Similarly, 4.4% of students with untreated symptoms at baseline compared to 14.3% at follow-up reported planning to seek treatment. As with perceived need, the proportion that considered and/or planned to seek treatment decreased from baseline to 12-week follow-up in the control condition in Study #2. Consideration of treatment at follow-up was significantly higher in the intervention condition (21.3%) relative to the control condition (9.6%) in Study #2; controlling for individual characteristics and symptom severity, students in the intervention condition with untreated symptoms have 2.5 times higher odds of having considered treatment at follow-up. Findings from these studies point to important directions for future work related to help-seeking for mental health.

Implications. This section describes implications from the present intervention studies for theory, research, and practice related to mental health service utilization. I also describe specific next steps for optimizing the intervention based on findings from the survey data and feedback collected during post-intervention interviews.

Implications for Theory: Current models of health service utilization (as reviewed in chapter 2) assume progression through the help-seeking process (eventually resulting in treatment utilization) for individuals with positive attitudes and beliefs and sufficient knowledge and means. Research and practice, in the campus setting and elsewhere, is limited by an emphasis on these traditional models of help-seeking. In reality, the campus mental health treatment gap is wide despite prevailing evidence that most students with untreated mental illnesses do not experience stigmatizing beliefs, knowledge deficits, or other presumed barriers to care. Advancing theoretical

understandings of help-seeking (and research and practice in this area), will require continued acknowledgment of entirely new factors that may impact perceived need, intentions, and help-seeking behavior.

The conceptual framework proposed in this chapter is specific to mental health service utilization, whereas other models (as reviewed in chapter 2) were developed for health service utilization generally. The framework laid out here represents a departure from current models of help-seeking in that it acknowledges cognitive biases that may impede help-seeking for mental health. The potential relevance of these biases is motivated by factors not commonly accounted for in mental health services research, namely that students with mental health problems may not perceive a need for treatment or may not perceive their need to be urgent due in part to problematic time preferences and downward social comparisons (at baseline, rates of future discounting were in fact higher among students with untreated symptoms and less than one-quarter of these students believed their objectively disordered habits and attitudes to be “a lot more” worrisome relative to their same-gendered peers). Furthermore, the task of seeking mental health treatment may be especially susceptible to procrastination. These biases offer a lens through which to understand the pervasive yet understudied lack of urgency among students with significant untreated symptoms; addressing these biases requires new intervention approaches that have important implications for research and practice, as described below.

The conceptual framework proposed in this chapter was described as an innovative application of concepts from behavioral economics and social psychology (i.e., borrowing from these fields). Findings from the present study also suggest several

opportunities for help-seeking research to enhance behavioral economics and social psychology. For example, studies of time preferences typically measure future discounting with regard to money. As in the present study, surveys often estimate discount rates by asking individuals how much money they would need to receive tomorrow to forgo receiving money today. Understanding potential variations in time preferences across contexts (including for mental health service utilization) could lead to the development of more nuanced theories of future discounting, present-orientation, and perhaps entirely new aspects of time preferences specific to health behavior. Likewise, understanding social comparison bias and procrastination in the context of mental health and mental health service utilization are important directions for future research and practice in this area.

Implications for Research and Practice: Findings from the present studies point to several directions for future research and practice related to campus mental health services. First, online surveys and screens represent low-cost opportunities to identify large numbers of students with untreated symptoms; these students can then be targeted through prevention and intervention efforts on campus. Screening efforts should use validated measures (as in the present studies) to assess symptom levels; from these screens, a simple yet high-impact step is to provide student respondents with immediate, personalized feedback about their results. The baseline survey endings provided this type of feedback based on algorithms programmed into Qualtrics; as described in the following quote from an intervention participant, this feedback played an important part in encouraging the student to seek treatment: “I kind of have known that I’ve had these issues…but then seeing it get named by a survey…it kind of helped

it be more of a priority….it seemed like the right call to go forward and meet with someone and start seeking help".

Intervention efforts should be driven, first and foremost, by students' preferences, needs, and attitudes, rather than by traditional conceptualizations of help-seeking. The intervention tested here was designed to address the lack of urgency that students report as their main reason for not seeking help (as found in chapter 3). In this way, development of this intervention (and its conceptual framework) was based on student data, a starting point that should inform mental health intervention design and implementation on college and university campuses without exception. Data-driven approaches will likely shift the emphasis of interventions from minimizing stigma and other presumed barriers to more explicitly addressing lack of perceived need/urgency.

Relatedly, researchers and practitioners alike need to challenge rational assumptions of help-seeking. The present study provided further evidence of irrational decision-making with regard to mental health treatment utilization: at baseline, students in the intervention sample had not sought help despite having elevated symptoms (above even the standard thresholds) and despite over 90% recognizing that their "eating habits, exercising, or feelings about eating, shape or weight" were negatively affecting their lives.[62] Paradoxically, these students most commonly reported not seeking treatment because they "have not had any need for counseling or therapy". In this way, the decision to seek treatment appears highly susceptible to cognitive biases (as discussed above).

[62]As noted in chapter 2, current models of health service utilization do not account for the potential impact of impairment, which may actually impede help-seeking.

In particular, interventions should be designed and evaluated with attention towards perceived need. In the present studies, rates of perceived need were very low at baseline: just 14.5% of students with significant untreated symptoms thought they needed help. Though perceptions of need increased as a result of the intervention, overall rates remained low (19.5% at 12-week follow-up). In the present studies, as in most studies of mental health service utilization, a single survey item was used to measure perceived need.

Perceived need is a nuanced concept that should be unpacked through future research; for example, brief vignettes describing varied levels of symptom severity could be used to help understand thresholds of perceived need. In practice, help-seeking interventions should focus on creating a heightened sense of perceived need among students with untreated symptoms, as this appears (more so than attitudes or knowledge) to be a key predictor of help-seeking behavior. Findings from the present study offer modest, initial support for the relative risk information approach (i.e., comparison on). In general, there is a need for innovative approaches, particularly in the context of early intervention, that reframe perceived need for mental health services.

New strategies are also needed to address the disconnect between help-seeking intentions and actions. Among students who did not seek treatment during the course of the present intervention, one-third had considered seeking professional help and nearly 15% indicated plans to seek counseling or therapy at 12-week follow-up. These intervention effects, though encouraging (particularly for this sub-sample of true “non-help-seekers”), are further evidence of how plans often fail to translate into action.

As described above with regard to theoretical implications, the task of seeking help appears highly susceptible to procrastination. Commitment strategies—self-control strategies whereby individuals pre-commit themselves to avoid future decision-making error (Ariely & Wertenbroch, 2002)—may help align students' intentions to seek help with actual treatment utilization behavior. Commitment strategies have been effectively used in behavioral economic and social psychology interventions to promote behavior change with regard to dieting, retirement saving, exam preparation, and other outcomes (Ariely & Wertenbroch, 2002). A basic example of how this could be implemented in practice (including in a modified version of the intervention evaluated here) might involve reminding students who reported plans to seek treatment of their unmet intentions over time; from the perspective of social psychology, being confronted with an unrealized commitment would lead to psychological discomfort (cognitive dissonance (Festinger, 1962)) and thus a desire to resolve the inconsistency between intentions and actions. Cognitive dissonance has been studied in the context of eating disorder symptoms (particularly with regard to internationalization of the thin ideal) (Stice, Shaw, Becker, & Rohde, 2008); building off of this work, generating cognitive dissonance could be relevant to promoting help-seeking behavior among students with unrealized intentions to utilize eating disorder treatment (and mental health services more generally).

Specific Next Steps: Moving forward, I plan to optimize the online intervention evaluated here based on quantitative results from survey data and student feedback from qualitative interviews. Overall students found the intervention to be useful and levels of satisfaction were high. Nearly 80% of students thought the messages were

helpful in terms of encouraging help-seeking. Though the findings did not provide definitive evidence in support of including or excluding any of the individual intervention components, I intend to incorporate the default and peer comparison components into the next version of this intervention. As described below, I also intend to further tailor the intervention and broaden the scope of treatment options offered.[63]

With regard to the default, I realized, as I developed the intervention and conducted a usability test in fall 2014, that the most feasible and ethical operationalization was a "soft" default, positioning half of students to opt-out of and half to opt-in to the weekly emails. As such, I was not surprised that there were no significant differences in help-seeking outcomes from the default component in the present studies.[64] In an optimized version of this intervention, I plan to continue leveraging the default bias by positioning all students to opt-out of treatment linkage; this may be particularly effective in the context of online treatment options, as described below.

For the peer comparison, there is some quantitative evidence to suggest that providing relative risk information was, in and of itself, an effective intervention component (for example, students in comparison on conditions were nearly two times more likely to have plans to seek treatment than students in comparison off conditions).

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[63]Lessons from learning analytics may be useful for personalizing and tailoring the intervention moving forward. The learning analytics movement involves increasing use of student data to optimize the academic experience. Learning analytics seeks to address questions such as "how should the user experience be changed for this user?" (U.S. Department of Education Office of Educational Technology, 2012, 35). Learning analytics draws data from numerous sources to build predictive models, including self-reported data and passively collected data (e.g., high school transcripts, use of course software, engagement with campus resources such as advising). Importantly, learning analytics has been used for intervention purposes, providing campus administrators and educators with real-time information to support at-risk students. In this way, data are "used to better predict future events and make informed decisions aimed at improving outcomes" (Educause, 2010).

[64]Moving forward I plan to analyze data from the email server (myemma.com) to understand patterns with regard to opting-out and opting-in of the weekly messages.

In post-intervention interviews, students in comparison on conditions noted the impact of this component on their help-seeking attitudes and behaviors. I was prepared to prompt these students to recall the peer comparison component but this proved unnecessary; when asked to reflect on their experience participating in the intervention (the very open-ended question I used to begin the interviews), students in the comparison on condition immediately spoke to this piece: one student who sought help during the intervention noted that “using that comparison I was in a bad place…and I remember that… that language just like reminded me about where I was at”. That students remembered these comparisons is particularly promising given that this component was not even operationalized in all of the weekly messages (continuing to reiterate SCOFF and WCS scores (the only screens in the baseline survey) seemed redundant, so I did not include the peer comparison in every message). Moving forward, I intend to create more opportunities for making peer comparisons in the intervention messages (by including additional measures in the baseline survey that can used to draw comparisons with national averages in HMS and HBS data) and to further personalize the peer group referenced in these comparisons. Refining the peer group beyond being gender-specific (as in the present study) will likely involve interviews and focus groups to understand the identities and characteristics that are most important to students in this context (i.e., by race, age, athlete-status, etc.) and will undoubtedly require even more large-scale data collection to ensure sufficient sample sizes along specified peer group dimensions.

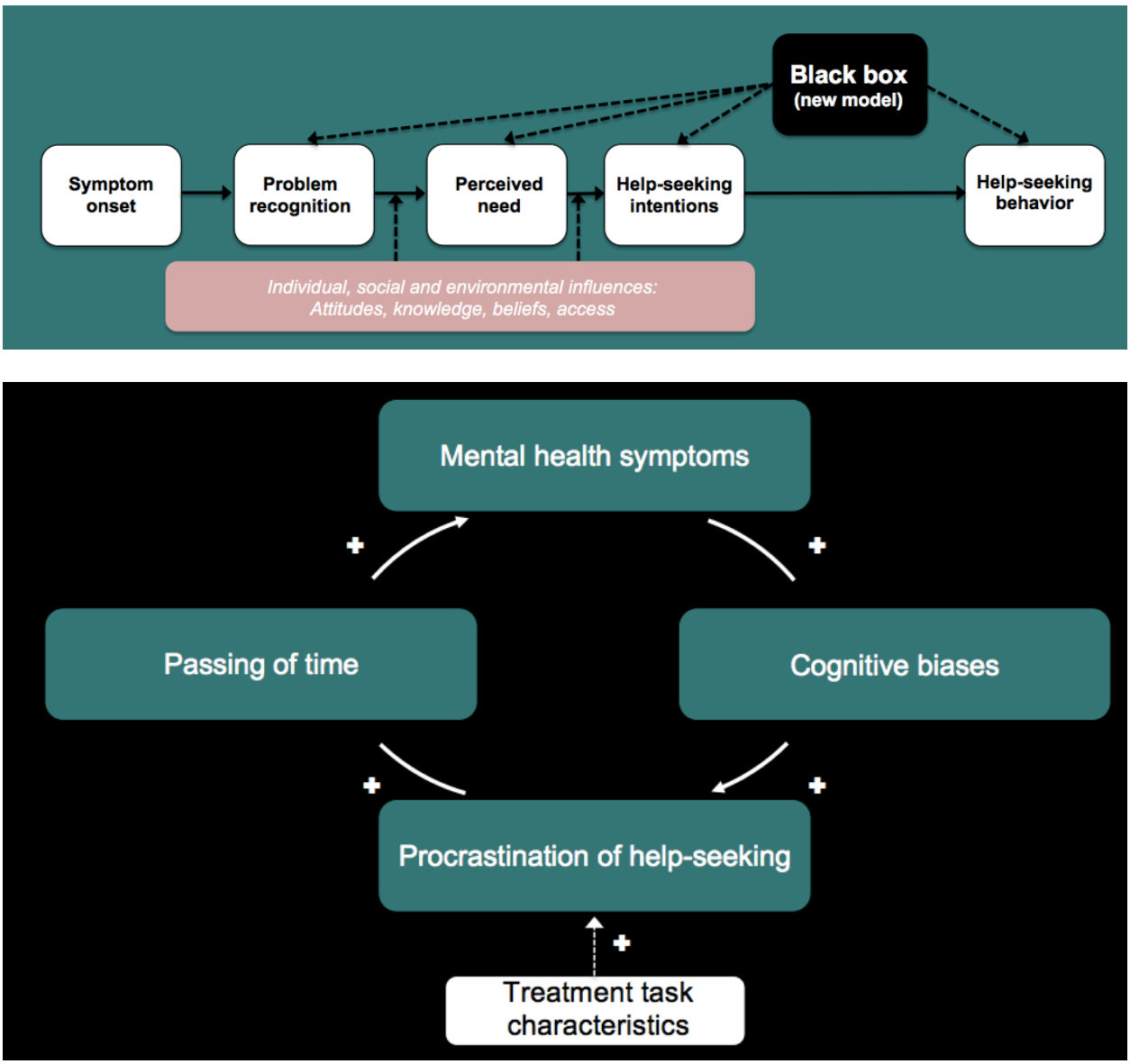
Relatedly, the qualitative interviews revealed that participants wanted to hear the “student voice” in the intervention messages. I hope to collect help-seeking testimonials

(brief stories of personal experiences using mental health services) from a diverse sample of college students. These testimonials could then be included in the weekly messages (perhaps matched to intervention participants' gender, race, or other characteristics identified in future interviews/focus groups as being most salient for peer comparisons).

Moving forward, I plan to broaden the outcome of interest by linking to not only in-person counseling/therapy but also free, online treatment options. In recent years, I have developed a promising partnership with a group of clinician-researchers designing online eating disorder treatment programs. In a pilot study on two campuses, we found promising evidence of treatment uptake when linking students in need from HBS to the online treatment programs (nearly 20% of students with significant symptoms enrolled in the suggested program) (Lipson et al., *in press*). Linking to an online intervention may make the default option a more powerful component of the intervention in future iterations and lead to higher rates of uptake than in the pilot study referenced above. In the context of in-person treatment, the strongest operationalization of the opt-out condition would be to schedule counseling appointments for students; this is clearly infeasible and a violation of personal autonomy. For online eating disorder treatment programs, however, it is more reasonable to consider a potentially stronger default option in which students are automatically enrolled and need only to enter the account information provided to engage in treatment. Online treatment programs offer numerous advantages, including the convenience of being available to students 24/7. This could address some of the most commonly reported barriers, including lack of time.

Overall, the treatment-linkage intervention piloted here is highly conducive to widespread dissemination, given that it was conducted entirely online and run by a very small team (I ran the day-to-day operations with guidance and oversight from my advisors). Though the present studies did not include a formal cost-effectiveness analysis, the intervention, which appears to be modestly effective, is potentially very cost-effective: it is inexpensive to administer, requires minimal personnel time, and is highly automatable. An intervention of this nature—beginning with a web-based screen, providing personalized results to students with significant untreated symptoms, and facilitating the link to treatment via online messaging—could easily be disseminated on an even larger-scale to promote help-seeking for eating disorders across the country and for other mental health conditions among college students and adolescent and young adult populations more broadly. The intervention could be modified to address other conditions common on college campuses (e.g., depression/anxiety), for which cognitive biases are also relevant and for which existing help-seeking strategies are similarly insufficient. These and other overarching directions for future research and practice are described in the conclusion chapter.

Figure 4. Conceptual Framework



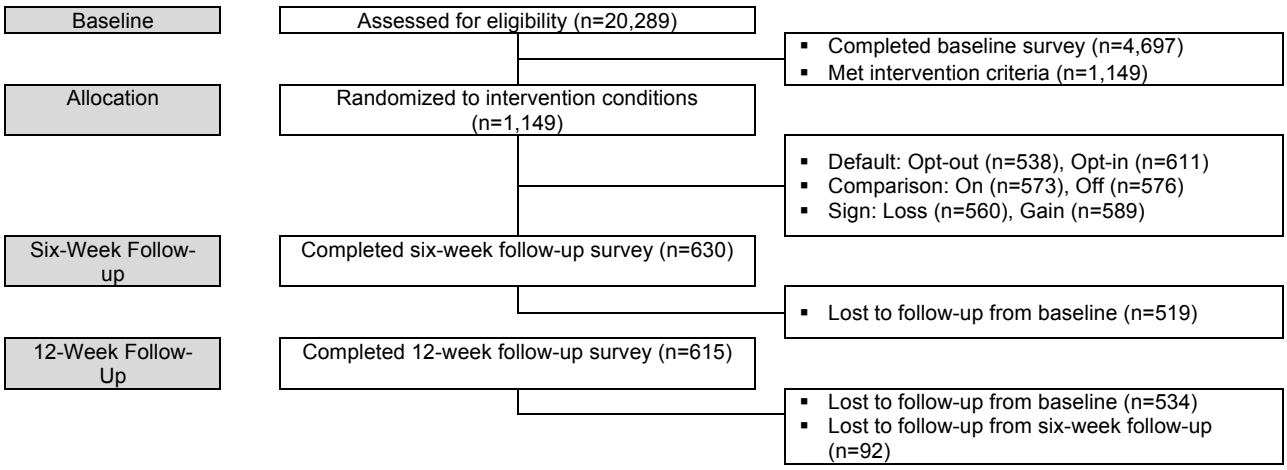
Notes: The top image depicts a traditional understanding of the help-seeking process (*as presented in* ***Figure 1***), with the addition of a "new model" (or "black box") that may affect problem recognition, perceived need, help-seeking intentions, and/or help-seeking behavior. The bottom image illustrates the conceptual framework laid out in chapter 4 (the "new model" or "black box"), which accounts for the potential influence of cognitive biases on the help-seeking process.

Table 12. 2 x 2 x 2 Factorial Design, Study #1

Intervention Condition (baseline sample size)	Default	Comparison	Sign
A (n=147)	Opt-out	On	Loss
B (n=167)	Opt-out	On	Gain
C (n=131)	Opt-out	Off	Loss
D (n=166)	Opt-out	Off	Gain
E (n=140)	Opt-in	On	Loss
F (n=122)	Opt-in	On	Gain
G (n=142)	Opt-in	Off	Loss
H (n=134)	Opt-in	Off	Gain

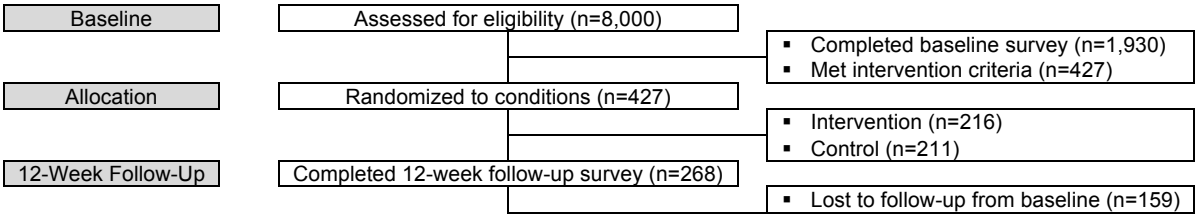
Notes: Main effects of the intervention are based on comparisons between students in different levels of the same factor (e.g., main effects of the default are estimated by comparing students in opt-out conditions (A, B, C, D) with those in opt-in conditions (E, F, G, H)). Interaction effects are based on comparisons of students across each of the eight intervention conditions (A-H).

Figure 5a. Participant Flow, Study #1



Notes: 538 students completed all three surveys (46.82% of the intervention sample).

Figure 5b. Participant Flow, Study #2



Notes: 268 students completed both surveys (62.76% of the sample that met intervention criteria).

Table 13. Baseline Intervention Sample Characteristics (%)

Demographics	STUDY #1 (N=615)	STUDY #2 (N=268)
Age (18-20)[1]	67.64	54.10
Female	83.09	71.54
White[1]	74.63	71.64
Black[1]	3.41	4.10
Latino/a[1]	4.07	4.48
Asian[1]	6.99	11.19
Other race/ethnicity[1]	10.89	8.58
Pell Grant recipient[1]	26.25	
U.S. citizen[1]	94.96	95.90
Heterosexual	87.15	
Campus and Academics		
On-campus housing	56.58	
Program year (first/second)[1]	44.39	52.61
GPA (≥3.5)[1]	42.93	28.36
Campus "A"	47.97	100.00
Campus "B"	25.20	0.0
Campus "C"	17.56	0.0
Campus "D"	9.27	0.0
Intervention Conditions		
Default (opt-out)	47.64	
Comparison (on)	47.64	
Sign (loss)	48.62	
Intervention		45.52
Control		54.48

Notes: [1]Data provided by financial aid/Registrars' offices at study sites; all other measures taken from students' self-reported survey responses. Pell Grant recipient data are missing for students at campus "A" (N=295 in Study #1 and N=268 in Study #2). "Other race/ethnicity" includes students characterized in institutional data provided by campus Registrars' as "Native American/Alaskan Native", "other/multi" race/ethnicity, and "unknown" race/ethnicity. "On-campus housing" includes "on-campus housing, residence hall", "on-campus housing, apartment", and "fraternity or sorority house". In Study #2, the baseline survey did not include measures of sexuality or housing.

Table 14. Unadjusted Percentages at Baseline and 12-week Follow-up

	STUDY #1																	STUDY #2				
	Default Opt-out		Opt-in			Comparison On		Off			Sign Loss		Gain			Overall		Intervention		Control		
	B	12	B	12	*p*	B	12	B	12	*p*	B	12	B	12	*p*	B	12	B	12	B	12	*p*
Tx, past 6 wk	1.38	8.39***	2.17	7.01**	ns	2.74	8.65**	0.93	6.75***	ns	1.34	5.82**	2.22	9.42***	†	1.79	7.67***	0.82	5.74*	2.05	2.74	ns
Perceived need	13.65	19.80*	15.22	18.32	ns	15.70	20.48	13.35	17.70	ns	12.71	18.73*	16.14	19.30	ns	14.47	19.02*	8.20	11.48	11.64	8.22	ns
Considered	18.86	29.47**	18.21	36.42***	†	22.91	35.76***	14.61	30.56***	ns	17.02	29.11***	19.93	36.93***	*	18.52	33.11***	10.66	21.31*	10.96	9.59	**
Plan to seek	3.09	13.17***	5.64	15.38***	ns	4.81	17.54***	4.08	11.36***	*	5.41	14.19***	3.50	14.47***	ns	4.43	14.33***	5.81	9.24	7.00	5.67	ns
COLUMN	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22

Notes: ***p<0.001, **p<0.01, *p<0.05, †p<0.10. Significance is based on two-sample z-tests of proportions. Table values are percentages. “B”=baseline, “12”=12-week follow-up. “tx” is any eating disorder therapy/counseling from a mental health professional. “wk”=weeks. Significance in columns labeled “12” indicates a statistically significant change from baseline to 12-week follow-up within one level of a condition and significance in “*p*” columns indicates statistical significance across levels of the same condition at 12-week follow-up. If statistical significance is not indicated after a value in column “12”, the difference from baseline to 12-week follow-up within that level of a condition is not statistically significant; in “*p*” columns, “ns” is reported for non-significant comparisons within different levels of the same condition at 12-week follow-up.

Table 15. Regression-adjusted Intervention Effects at 12-week Follow-up—Logistic Regressions

	STUDY #1										STUDY #2
	Opt-out	Comparison On	Loss	A	B	C	D	E	F	G	Intervention
Tx, past 6 wk	1.25 (0.66, 2.35)	1.21 (0.65, 2.27)	0.63 (0.33, 1.21)	0.60 (0.16, 2.26)	1.11 (0.35, 3.52)	0.96 (0.27, 3.46)	0.68 (0.19, 2.40)	0.55 (0.13, 2.38)	1.82 (0.58, 5.69)	0.73 (0.20, 2.59)	2.24 (0.58, 8.64)
Perceived need	1.20 (0.76, 1.90)	1.20 (0.76, 1.91)	1.09 (0.68, 1.73)	1.22 (0.47, 3.15)	2.00 (0.79, 5.04)	1.15 (0.39, 3.36)	1.45 (0.58, 3.65)	2.19 (0.81, 5.87)	1.73 (0.64, 4.69)	2.24† (0.91, 5.53)	1.61 (0.66, 3.93)
Considered	0.72† (0.49, 1.06)	1.14 (0.77, 1.68)	0.82 (0.56, 1.21)	1.26 (0.58, 2.74)	2.34* (1.11, 4.93)	1.14 (0.49, 2.62)	1.75 (0.84, 3.65)	1.28 (0.57, 2.86)	1.06 (0.46, 2.46)	1.23 (0.56, 2.68)	2.48* (1.17, 5.26)
Plan to seek	0.93 (0.56, 1.53)	1.75* (1.06, 2.90)	0.95 (0.58, 1.57)	1.30 (0.48, 3.57)	2.01 (0.77, 5.27)	1.71 (0.61, 4.79)	0.32† (0.09, 1.13)	0.71 (0.21, 2.41)	1.92 (0.70, 5.28)	0.84 (0.29, 2.44)	1.19 (0.37, 3.84)
COLUMN	1	2	3	4	5	6	7	8	9	10	11

Notes: ***p<0.001, **p<0.01, *p<0.05, †p<0.10. 95% confidence intervals are included in parentheses. "tx" is any eating disorder therapy/counseling from a mental health professional. "wk"=weeks. Models control for age (18-20 versus 21+), gender, race/ethnicity, GPA (≥3.5 versus <3.5), campus (not relevant to Study #2), baseline eating disorder symptoms (operationalized as "very high symptoms" where 1=SCOFF≥4 and/or WCS≥80 and 0=SCOFF<4 and WCS<80), and baseline response to the dependent variable. For the models based on equation 1b, intervention condition H serves as a reference group. For models based on equation 2, the control condition serves as the reference group. All intervention effects are reported as odds ratios (ORs).

CHAPTER 5: CONCLUSION

Understanding and Addressing the Campus Mental Health Treatment Gap

College student mental health is inextricably linked with important functional, social, and economic outcomes, from institutional retention rates (Arria et al., 2013; Eisenberg et al., 2009a) to future workplace productivity (Wang et al., 2007). As such, campus mental health has far-reaching consequences from the individual to society writ large. Colleges and universities today are faced with a growing set of challenges with respect to student mental health. At institutions nationwide, mental health problems are highly prevalent (Eisenberg et al., 2013), seem to be increasing (Cook, 2007; Twenge et al., 2010), and are typically untreated (Blanco et al., 2008).

Student mental health appears to be at an all-time low (Eagan, Lozano, Hurtado, & Case, 2014): roughly one in three undergraduates meets diagnostic criteria for a mental illness (Eisenberg et al., 2013). That said, the treatment gap remains wide: as revealed in chapter 3, an estimated 60% of undergraduates with mental health problems are not receiving services. With over 21 million students enrolled in U.S. postsecondary education (NCES, 2012) (roughly half of each birth cohort (Hussar & Bailey, 2014)), there are likely more than two million college students whose mental disorders go untreated each year. The overarching goal of this dissertation was to advance understanding of the mental health treatment on college campuses. Below I provide a summary of each chapter and offer directions for future research and practice based on key findings.

Summary by Chapter

Chapter 2 offered a critical review of campus mental health help-seeking research and practice. I began by critiquing traditional theories of help-seeking (the Health Belief Model, Socio-Behavioral Model of Health Service Utilization, and Theory of Planned Behavior). Collectively, these conceptualizations offer a set of psychological and structural determinants of help-seeking (demographic characteristics, access, need, beliefs, attitudes, and intentions) but have limited explanatory power for scenarios in which individuals do not utilize treatment despite access to care, positive attitudes, and social reinforcement.

In the second half of chapter 2, I reviewed the most common mental health help-seeking interventions used on college campuses, the vast majority of which focus on determinants of service utilization as emphasized by traditional theories of help-seeking. While stigma reduction and awareness campaigns, screening and linkage programs, and gatekeeper-trainings have sometimes achieved desired effects for secondary outcomes (e.g., they have lowered stigma or increased knowledge and self-efficacy), rarely and inconsistently have interventions had a direct impact on actual mental health service utilization. In synthesizing the limited effectiveness of existing help-seeking interventions, chapter 2 raised a key question to be addressed in chapter 3: *why are students with mental health problems not seeking help?*

Chapter 3. In the third chapter, I examined the campus mental health treatment gap through detailed descriptive analyses of two primary data sets, the Healthy Minds Study and the Healthy Bodies Study. In a large and diverse sample, I found that nearly

60% of students with apparent mental health problems had not received any form of treatment in the past year. The majority of students with untreated symptoms had high knowledge of and positive attitudes regarding mental health and mental health services.

I found that perceived need has a stronger association with help-seeking than stigma or knowledge. Many students with untreated symptoms, even those with severe and co-occurring symptoms, had low rates of perceived need. When asked why they had not sought help, students with untreated mental health problems most commonly cited reasons that imply lack of urgency and lack of perceived need: “I prefer to deal with issues on my own”, “I question how serious my needs are”, “I don’t have time”, and “I haven’t had a need”. These reasons are not directly accounted for in current campus mental health help-seeking interventions (as reviewed in chapter 2). In response to this, chapter 4 introduced and evaluated a new approach for narrowing the campus mental health treatment gap.

Chapter 4. In chapter 4, I laid out a new conceptual framework of help-seeking specific to mental health based on concepts from behavioral economics and social psychology. The framework recognizes the relevance of key cognitive bias that may impede help-seeking for mental health, particularly the tendency to discount the future, to underestimate symptom severity and need for treatment based on biased social comparisons, and to procrastinate certain types of tasks (namely those that are unpleasant, important, and have certain immediate costs and uncertain future benefits). These interrelated biases offer a lens through which to understand the lack of urgency and lack of perceived need that appears to be at the heart of students’ non-help-

seeking. This framework represents a conceptual innovation in the area of mental health services.

In an effort to narrow the eating disorder treatment gap on college campuses, I piloted two, 12-week online intervention studies designed to identify students with significant, untreated symptoms and to promote help-seeking behavior by way of reframing the decision and facilitating a convenient link to treatment. Findings from both the randomized factorial design study (Study #1) and the RCT (Study #2) suggest that the intervention had modest but significant positive effects on help-seeking behaviors and attitudes. Effects on eating disorder treatment utilization are particularly promising given that help-seeking behavior is rarely changed (if measured at all) in campus-based help-seeking intervention studies. That said, over 90% of students in the interventions were still untreated after 12 weeks. Much work is still needed to achieve the ultimate objective of narrowing the campus mental health treatment gap.

Future Directions for Research and Practice

In previous chapters of this dissertation, I have offered specific suggestions for theory, research, and practice related to understanding and addressing the campus mental health treatment gap. The present section briefly describes three overarching directions for future research in this area.

Survey Research to Understand Help-seeking. Population-level survey research will continue to play a central role in understanding mental health and mental health service utilization on college and university campuses. Online surveys such as the Healthy Minds Study offer an important opportunity for institutions to collect large-scale, cross-sectional data about student mental health and help-seeking.

In terms of survey content, future research should focus on understanding *non*-help-seeking through more nuanced measures of factors related to mental health service *non*-utilization, including lack of perceived need. Findings from chapters 3 and 4 indicate that lack of perceived need and doubts about the severity of need are two of the most important reasons that prevent students with significant symptoms from seeking treatment.

Longitudinal studies offer a unique opportunity to measure whether and how perceived need, motivation for treatment, help-seeking intentions, and other key factors (including the cognitive biases discussed in chapter 4) fluctuate over time within individuals in accordance with their mental health status and the impact therein on the stages of help-seeking. Current models of help-seeking—namely the HBM, SBM, and TPB—are unable to fully understand delays to treatment and how various factors—including symptom severity and perceived need—may evolve over time. As such, collecting longitudinal data about student mental health and help-seeking, both intensively (e.g., through semester-long weekly, self-report assessments) and over longer periods of time (e.g., following a cohort from matriculation to graduation), is an important direction for advancing theory and research. Longitudinal survey studies also offer an opportunity to more rigorously examine the conceptual framework developed in chapter 4. This research would help to identify patterns in cognitive biases (including future discounting and downward social comparison) alongside changes in symptoms, problem recognition, perceived need, help-seeking intentions, and behaviors, and their interactions therein, over time. In other words, where in the help-seeking process and for whom are cognitive biases most pronounced? Understanding the direction and

magnitude of cognitive biases within specific stages of help-seeking could inform intervention development in terms of where and how to reframe the decision to seek treatment.

As stated in chapter 4, the development and implementation of campus help-seeking interventions (and other mental health programs and services) should be guided by survey research and adapted to meet the needs of today's college students. This requires that findings from survey data be disseminated to campus administrators, policymakers, and other stakeholders. In this way, translating research-to-practice is essential for understanding and addressing the campus mental health treatment gap moving forward.

Population-level Approaches for Matching Students to Appropriate Resources. The majority of college students with the most urgent need for clinical care—those with severe and co-occurring symptoms—are not receiving mental health treatment. Promoting help-seeking for these students is the first major challenge (and the primary focus of this dissertation); the second challenge is the inadequate capacity of many campus mental health service systems to deliver timely care to students with acute need. Operating with limited resources, many college counseling centers have waitlists, particularly during peak times in the academic year (Gallagher, 2012).

There is a desperate need for triaging of mental health services on college campuses. Screening and linkage programs could be enhanced to make campus mental health systems operate more efficiently such that students with the highest needs are prioritized. Screenings should end by providing immediate, personalized feedback to respondents along with information about local mental health resources;

such feedback might include scores from screening tools, interpretations of screening results and symptom levels, and, if possible, relative risk information (i.e., how respondents' scores compare to national student averages). Rather than a standard list of resources for all respondents, information about mental health resources should be tailored according to individual needs along the mental health continuum (Keyes, 2002). The relevance of suggested resources should be described to students in the context of their screening results.

Triaging of resources could be based on the public health stages of prevention and intervention, from primary (for students with no symptoms/low symptom levels) to secondary (for students with sub-clinical symptoms) to tertiary (for students with clinical symptoms) (World Health Organization, 2004). Primary (or "universal") prevention programs aim to provide support and resources before problems occur; primary prevention resources could include campus wellness centers, yoga and meditation classes, or basic information about important health behaviors such as sleep, diet, and exercise. Secondary ("selective" or "indicated") prevention programs target high-risk individuals to reduce distress and prevent symptoms from becoming more severe; suggested resources might include group therapy through the counseling center or evidence-based online programs. As described in chapter 4, understanding uptake of online prevention and intervention programs is an important direction for future research. Tertiary programs are typically clinical efforts aimed at reducing psychopathology; for students with clinical symptoms, mental health treatment options should be promoted, including both on and off campus resources. Of course suggesting certain resources in screening-linkage programs does not preclude students from

accessing other services on their own; the objective of a triaged screening-linkage program is simply to optimize mental health service delivery at a population-level. Through longitudinal data collection efforts, students' mental health status can be monitored over time allowing for suggested resources to shift according to present needs. In this way, as with all the directions for future research noted here, approaches for matching students to appropriate resources will be most efficient when implemented as part of a comprehensive research initiative.

Help-seeking Interventions. There are at least two main priorities for mental health help-seeking interventions moving forward: (1) existing strategies need to be rigorously evaluated through large-scale RCTs that measure help-seeking behavior; and (2) new intervention approaches need to be developed in order to promote early help-seeking among students in need.

Measuring mental health treatment use is an obvious but essential step for future help-seeking intervention research. As reviewed in chapter 2, many campus-based studies have failed to measure the behavioral outcome of interest (only nine of 32 studies actually measured help-seeking) and only a small proportion of studies that measured treatment utilization had significant positive effects (*see* ***Table 1***). For anti-stigma and awareness campaigns and gatekeeper-training programs in particular, RCTs are needed to determine causality between changes in attitudes and knowledge and subsequent help-seeking behaviors. Furthermore, evaluations of new and existing help-seeking interventions should measure key outcomes over longer periods of time given that certain outcomes (e.g., knowledge and gatekeeper skills) are known to diminish while effects for others (e.g., help-seeking behavior) may take longer to reveal.

In this way, short-term evaluations may be overestimating certain intervention effects while underestimating others.

As noted in chapter 4, developing new interventions that move students from intention to action could play a major role in narrowing the campus mental health treatment gap. In addition to commitment strategies, interventions based on motivational interviewing (MI) may help students take the step towards treatment. MI is a “directive, client-centered counseling style for eliciting behavior change by helping clients to explore and resolve ambivalence” (Rollnick & Miller, 1995, 326). For many students, working through “ambivalence” could provide the much needed push towards treatment seeking. Leveraging technology, MI can be delivered via text messaging or online portals; at least one pilot study has found promising results linking from an online screen to mental health services using MI principles in this way (King et al., 2015).

Finally, behavioral economics and social psychology may inform the development of innovative help-seeking interventions for mental health. The fundamental concepts of these fields have yet to permeate campus mental health research. I have described ways in which the default bias and social comparison bias might be addressed to help reframe the decision to seek treatment. I think there are many other opportunities to understand and address cognitive biases in help-seeking intervention research using strategies borrowed from behavioral economics and social psychology. For example, I have begun thinking about the relevance of “channel factors”; essentially, certain behaviors can be realized by the opening of a channel that facilitates means to achieving a desired goal. The power of channel factors was first demonstrated in a study of tetanus shots: half of respondents (group 1) were informed

of the risks of tetanus and the benefits of inoculation and were told where they could go to receive a shot while the other half (group 2) were given the aforementioned information along with a map with the local infirmary circled and were asked to look at their schedule for the week to select a time to get the shot and to look at the map to plan their exact route to the infirmary. Follow-up surveys revealed that communicating the risks, benefits, and availability of tetanus shots was effective in changing respondents' beliefs and attitudes but only 3% of respondents in group 1 took the behavioral step to actually get the shot, compared to nearly 30% in group 2 (Leventhal, Singer, & Jones, 1965). This study demonstrates that asking people to think about how they will achieve their goals can make a powerful impact on behavioral realization of stated goals. As shown in chapters 3 and 4, students who report intentions to seek treatment often fail to follow through with these plans. Interventions that ask students to make a specific plan for when and how they will seek treatment (i.e., opening "channels") may be effective in moving from intention to action.

Concluding Comments

It is my hope that findings from this dissertation will inform efforts on the part of key stakeholders—researchers, higher education administrators, policymakers, and others—to address the significant unmet need for mental health services on college and university campuses. I also hope that these findings prompt additional research in this area for college student populations and adolescents and young adults, more generally. By their scholarly nature, campuses are well-suited to disseminate best practices for mental health prevention, intervention, and service delivery beyond the college setting (Hunt & Eisenberg, 2010). Ultimately, understanding and addressing the mental health

needs of college students has the potential to help shape a healthier, happier society moving forward. It is this potential that motivates my research and the work of so many others dedicated to improving the mental health of young people.

APPENDIX

Table A1. Summary of Help-seeking Outcomes, Chapter 3

Outcome	Data	Survey Item(s)	Response Options	Operationalization
Any treatment, past-year (binary, behavior)	HMS	(A) In the past 12 months have you received counseling or therapy for your mental or emotional health from a health professional? (B) In the past 12 months have you taken any of the following types of prescription medications?	(A) Yes; No (B1) Psychostimulant; (B2) Antidepressant; (B3) Anti-psychotic; (B4) Anti-anxiety; (B5) Mood stabilizer; (B6) Sleep medication; (B7) Other; (B8) None	1=Yes to (A) and/or select (B1-7) 0=No to (A) and select (B8)[1]
Any treatment, current (binary, behavior)	HMS	(A) Are you currently receiving counseling or therapy?[2] (B) Of the medication(s) you just noted, which are you currently taking?[2,3]	(A) Yes; No (B1) Psychostimulant; (B2) Antidepressant; (B3) Anti-psychotic; (B4) Anti-anxiety; (B5) Mood stabilizer; (B6) Sleep medication; (B7) Other; (B8) None	1=Yes to (A) and/or select (B1-7) 0=No to (A) and select (B8)[1]
Therapy, past-year (binary, behavior)	HMS HBS	HMS: In the past 12 months have you received counseling or therapy for your mental or emotional health from a health professional? HBS: In the last 12 months, have you received counseling or therapy for issues related to eating and/or body image from a health professional?	HMS: Yes; No HBS: Yes; No	HMS: 1=Yes 0=No HBS: 1=Yes 0=No
Therapy, current (binary, behavior)	HMS	Are you currently receiving counseling or therapy?	Yes; No	1=Yes 0=No
Medication, past-year (binary, behavior)	HMS	In the past 12 months have you taken any of the following types of prescription medications?[1]	(1) Psychostimulant; (2) Antidepressant; (3) Anti-psychotic; (4) Anti-anxiety; (5) Mood stabilizer; (6) Sleep medication; (7) Other; (8) None	1=(1-7) 0=(8)[1]
Medication, current (binary, behavior)	HMS	Of the medication(s) you just noted, which are you currently taking?[2,3]	(1) Psychostimulant; (2) Antidepressant; (3) Anti-psychotic; (4) Anti-anxiety; (5) Mood stabilizer; (6) Sleep medication; (7) Other; (8) None	1=(1-7) 0=(8)[1]
Perceived need (continuous, attitude)	HMS HBS	HMS: In the past 12 months, I needed help for emotional or mental health problems such as feeling sad, blue, anxious or nervous. HBS: In the last 12 months, I think I needed help such as counseling or therapy for issues related to eating and/or body image.	HMS: (0) Strongly disagree; (1) Disagree; (2) Neither agree nor disagree; (3) Agree; (4) Strongly agree HBS: (0) Strongly disagree; (1) Disagree; (2) Neither agree nor disagree; (3) Agree; (4) Strongly agree	HMS: range=0-4 HBS: range=0-4
Knowledge of services (continuous, attitude)	HMS HBS	HMS: If you needed to seek professional help for your mental or emotional health while attending you would know where to go. HBS: I know where a	HMS: (0) Strongly disagree; (1) Disagree; (2) Neither agree nor disagree; (3) Agree; (4) Strongly agree HBS: (0) Strongly disagree; (1) Disagree; (2) Neither agree nor disagree; (3) Agree; (4) Strongly agree	HMS: range=0-4 HBS: range=0-4

Outcome	Data	Survey Item(s)	Response Options	Operationalization
		student at my school could go on campus to receive support for problems related to eating and/or body image.		
Stigma, perceived (continuous, attitude)	HMS HBS	HMS: Most people think less of a person who has received mental health treatment. HBS: Most students at my school would think less of a person with an eating disorder.	HMS: (0) Strongly disagree; (1) Disagree; (2) Somewhat disagree; (3) Somewhat agree; (4) Agree; (5) Strongly agree HBS: (0) Not true; (1) Somewhat true; (2) Mostly true; (3) Completely true	HMS: range=0-5 HBS: range=0-3
Stigma, personal (continuous, attitude)	HMS HBS	HMS: I would think less of a person who has received mental health treatment. HBS: I would think less of a person with an eating disorder.	HMS: (0) Strongly disagree; (1) Disagree; (2) Somewhat disagree; (3) Somewhat agree; (4) Agree; (5) Strongly agree HBS: (0) Not true; (1) Somewhat true; (2) Mostly true; (3) Completely true	HMS: range=0-5 HBS: range=0-3
Reasons for help-seeking (binary, dummy)	HMS	Earlier in this survey you reported that you have taken medication and/or received counseling/therapy in the past 12 months for your mental or emotional health. Which of the following are important reasons why you received those services?[3]	(1) I decided on my own to seek help; (2) A friend encouraged/pressured me to seek help; (3) A family member encouraged/pressured me to seek help; (4) Someone other than a friend or family member encouraged me to seek help; (5) I was mandated to seek help by campus staff; (6) I acquired more information about my options from [source]; (7) Other	1=(1-7) 0=not (1-7)
Barriers to help-seeking (binary, dummy)	HMS HBS	HMS: In the past 12 months which of the following explain why you have not received medication or therapy for your mental or emotional health?[3] HBS: Which of the following reasons are most important in explaining why you have not received counseling or therapy for your eating and/or body image concerns?[4]	HMS: (1) I have not had any need for mental health services; (2) I haven't had the chance to go but I plan to; (3) I prefer to deal with issues on my own; (4) There are financial reasons; (5) The location is inconvenient; (6) The hours are inconvenient; (7) I don't have time; (8) The number of sessions is too limited; (9) The waiting time until I can get an appointment is too long; (10) I am concerned about privacy; (11) I worry about what others will think of me; (12) I worry my actions will be documented on my academic record; (13) I worry my actions will be documented in my medical record; (14) I worry someone will notify my parents; (15) I fear being hospitalized; (16) People providing services aren't sensitive enough to cultural issues; (17) People providing services aren't sensitive enough to sexual identity issues; (18) I have a hard time communicating in English; (19) I question the quality of my options; (20) I question whether medication or therapy is helpful; (21) I have had a bad experience with medication and/or therapy; (22) The problem will get better by itself; (23) I question how serious my needs are; (24) I don't think anyone can understand my problems; (25) Stress is normal in	HMS: 1=(1-28) 0=not (1-28) HBS: 1=(1-19) 0=not (1-19)

Outcome	Data	Survey Item(s)	Response Options	Operationalization
			college; (26) I get a lot of support from other sources; (27) Other; (28) There have been no barriers that I can think of HBS: (1) I worry about what others will think of me; (2) Issues related to eating and body image are normal in college; (3) I'm not sure how serious my needs are; (4) I don't know what resources are available; (5) I don't have time; (6) I prefer to deal with issues on my own; (7) I get a lot of support from other sources; (8) The problem will get better without counseling or therapy; (9) I worry I will be pressured to lose weight; (10) I worry I will be pressured to gain weight; (11) There are financial reasons; (12) People providing services aren't sensitive enough to cultural diversity; (13) People providing services aren't sensitive enough to sexual or gender identities; (14) I worry my visit will be documented on my academic or medical record; (15) I worry someone will notify my parents; (16) I worry people providing services will judge me; (17) I haven't had the chance to go but I plan to; (18) I have not had a need for counseling or therapy; (19) Other	

Notes: [1]Students are also coded as 0 if no to (A) and did not select (B1-7). [2]Based on embedded survey skip logic. [3]Students instructed to "select all that apply". [4]Students instructed to "select up to 3 reasons that are most important".

Table A2. Study #1 Baseline Survey Endings and Intervention Messages, Chapter 4

BASELINE SURVEY ENDING (DISPLAYS WITHIN QUALTRICS)

SURVEY ENDING #1: CONSENT NOT GRANTED

Because you have not consented to complete the survey you may now close your browser.

[name of school] Counseling Center
[Counseling Center contact information]

SURVEY ENDING #2: INTERVENTION CRITERIA NOT MET (BELOW THRESHOLD)

Thank you for completing this survey! Your participation will help inform programs and resources for [name of school] students. We also hope that taking this survey has been a valuable experience for you. As stated before you began the survey, all of your responses will remain confidential.

To provide feedback about this survey, please email the researchers at HealthyBodiesTeam@umich.edu.

[name of school] Counseling Center
[Counseling Center contact information]

You have been automatically entered into a drawing for one of ten $50 MasterCard gift cards. The drawing will be conducted by researchers at the University of Michigan School of Public Health in Ann Arbor, Michigan in summer 2015. Winners will be notified by email and provided with information about how to collect the prize.

SURVEY ENDING #3: INTERVENTION CRITERIA NOT MET (ABOVE THRESHOLD)

Thank you for completing this survey! Your participation will help inform programs and resources for [name of school] students. We also hope that taking this survey has been a valuable experience for you. As stated before you began the survey, all of your responses will remain confidential.

Based on your responses, you have some indications of possible risk for an eating disorder, and you might find it helpful to speak with a trained professional about the topics addressed in this survey. There are resources available for you at [name of school] and we encourage you to take the next step to speak with someone. If you address your concerns now, rather than waiting, this could make a big difference for your health and well-being in the long run.

[name of school] Counseling Center
[Counseling Center contact information]

You have been automatically entered into a drawing for one of ten $50 MasterCard gift cards. The drawing will be conducted by researchers at the University of Michigan School of Public Health in Ann Arbor, Michigan in summer 2015. Winners will be notified by email and provided with information about how to collect the prize.

To provide feedback about this survey, please email the researchers at HealthyBodiesTeam@umich.edu.

SURVEY ENDING #4A: INTERVENTION CRITERIA MET (CONDITIONS A/B/E/F, SCOFF≥3)

Thank you for completing this survey! Your participation will help inform programs and resources for [name of school] students. We also hope that taking this survey has been a valuable experience for you. As stated before you began the survey, all of your responses will remain confidential.

YOUR RESULTS

Based on your responses, you appear to have some concerns about your eating and body image. **According to clinical guidelines, you are considered to be at high risk for developing an eating disorder.** The survey included a commonly used eating disorder assessment, called the SCOFF. Scores on the SCOFF range from 0-5, with higher scores indicating higher levels of eating disorder symptoms. A score of ≥2 signals a likely eating disorder. Your SCOFF score is [insert score]. On average, your peers have much lower SCOFF scores than you. In a recent study of [6,979 undergraduate women/4,222 undergraduate men/11,268 undergraduates] the average score was [0.9/0.5/0.7]. **You appear to be struggling with these issues more than other students.** With this in mind, we

hope that you'll consider the importance of seeking help now. We have created a customized document for [name of school] students containing information about resources for eating and body image concerns, which is available HERE. Contact information for [name(s) of local resource(s)] is also included below.

PAID RESEARCH OPPORTUNITY

We would like to invite you to participate in a 12-week informational program designed to help [name of school] students take advantage of available services for eating and body image concerns. As part of the program, you will be asked to complete 6- and 12-week follow-up surveys, similar to the one you just completed. If you complete these assessments, you will receive a $15 participation stipend. Participation is completely voluntary. You will receive a follow-up email with more information.

[list of campus/local resources]

Additionally, you have been automatically entered into a drawing for one of ten $50 MasterCard gift cards. The drawing will be conducted by researchers at the University of Michigan School of Public Health in Ann Arbor, Michigan in summer 2015. Winners will be notified by email and provided with information about how to collect the prize.

To provide feedback about this survey, please email the researchers at HealthyBodiesTeam@umich.edu.

SURVEY ENDING #4B: INTERVENTION CRITERIA MET (CONDITIONS A/B/E/F, WCS≥59)

Thank you for completing this survey! Your participation will help inform programs and resources for [name of school] students. We also hope that taking this survey has been a valuable experience for you. As stated before you began the survey, all of your responses will remain confidential.

YOUR RESULTS

Based on your responses, you appear to have some concerns about your eating and body image. **According to clinical guidelines, you are considered to be at high risk for developing an eating disorder.** The survey included a clinical screening tool, called the Weight Concerns Scale (WCS), which is commonly used to assess body image concerns and to identify individuals at risk for an eating disorder. Scores range from 0-100, with higher scores indicating higher levels of concern. A score of ≥47 signals a likely eating disorder. Your WCS score is [insert score]. On average, your peers have much lower WCS scores than you. In a recent study of [703 undergraduate women/320 undergraduate men/1,033 undergraduates] the average score was [39.7/28.2/34.2]. **You appear to be struggling with these issues more than other students.** With this in mind, we hope that you'll consider the importance of seeking help now. We have created a customized document for [name of school] students containing information about resources for eating and body image concerns, which is available HERE. Contact information for [name(s) of local resource(s)] is also included below.

PAID RESEARCH OPPORTUNITY

We would like to invite you to participate in a 12-week informational program designed to help [name of school] students take advantage of available services for eating and body image concerns. As part of the program, you will be asked to complete 6- and 12-week follow-up surveys, similar to the one you just completed. If you complete these assessments, you will receive a $15 participation stipend. Participation is completely voluntary. You will receive a follow-up email with more information.

[list of campus/local resources]

Additionally, you have been automatically entered into a drawing for one of ten $50 MasterCard gift cards. The drawing will be conducted by researchers at the University of Michigan School of Public Health in Ann Arbor, Michigan in summer 2015. Winners will be notified by email and provided with information about how to collect the prize.

To provide feedback about this survey, please email the researchers at HealthyBodiesTeam@umich.edu.

SURVEY ENDING #4C: INTERVENTION CRITERIA MET (CONDITIONS A/B/E/F, SCOFF≥3 & WCS≥59)

Thank you for completing this survey! Your participation will help inform programs and resources for [name of school] students. We also hope that taking this survey has been a valuable experience for you. As stated before you began the survey, all of your responses will remain confidential.

YOUR RESULTS

Based on your responses, you appear to have some concerns about your eating and body image. **According to clinical guidelines, you are considered to be at high risk for developing an eating disorder.** The survey included two clinical assessments used to identify individuals at risk for an eating disorder—the SCOFF and the Weight Concerns Scale (WCS). Scores on the SCOFF range from 0-5, with higher scores indicating higher levels of eating disorder symptoms. A score of ≥2 signals a likely eating disorder. Your SCOFF score is [insert score]. On average, your peers have much lower SCOFF scores than you. In a recent study of [6,979 undergraduate women/4,222 undergraduate men/11,268 undergraduates] the average score was [0.9/0.5/0.7]. Scores on the WCS range from 0-100, with higher scores indicating higher levels of concern. A score of ≥47 signals a likely eating disorder. Your WCS score is [insert score]. On average, your peers have much lower WCS scores than you. In a recent study of [703 undergraduate women/320 undergraduate men/1,033 undergraduates] the average score was [39.7/28.2/34.2]. **You appear to be struggling with these issues more than other students.** With this in mind, we hope that you'll consider the importance of seeking help now. We have created a customized document for [name of school] students containing information about resources for eating and body image concerns, which is available HERE. Contact information for [name(s) of local resource(s)] is also included below.

PAID RESEARCH OPPORTUNITY

We would like to invite you to participate in a 12-week informational program designed to help [name of school] students take advantage of available services for eating and body image concerns. As part of the program, you will be asked to complete 6- and 12-week follow-up surveys, similar to the one you just completed. If you complete these assessments, you will receive a $15 participation stipend. Participation is completely voluntary. You will receive a follow-up email with more information.

[list of campus/local resources]

Additionally, you have been automatically entered into a drawing for one of ten $50 MasterCard gift cards. The drawing will be conducted by researchers at the University of Michigan School of Public Health in Ann Arbor, Michigan in summer 2015. Winners will be notified by email and provided with information about how to collect the prize.

To provide feedback about this survey, please email the researchers at HealthyBodiesTeam@umich.edu.

SURVEY ENDING #4D: INTERVENTION CRITERIA MET (CONDITIONS A/B/E/F, SCOFF<3 & WCS<59)

Thank you for completing this survey! Your participation will help inform programs and resources for [name of school] students. We also hope that taking this survey has been a valuable experience for you. As stated before you began the survey, all of your responses will remain confidential.

YOUR RESULTS

Based on your responses, you appear to have some concerns about your eating and body image. **According to clinical guidelines, you are considered to be at high risk for developing an eating disorder. You appear to be struggling with these issues more than other students.** With this in mind, we hope that you'll consider the importance of seeking help now. We have created a customized document for [name of school] students containing information about resources for eating and body image concerns, which is available HERE. Contact information for [name(s) of local resource(s)] is also included below.

PAID RESEARCH OPPORTUNITY

We would like to invite you to participate in a 12-week informational program designed to help [name of school] students take advantage of available services for eating and body image concerns. As part of the program, you will be asked to complete 6- and 12-week follow-up surveys, similar to the one you just completed. If you complete these assessments, you will receive a $15 participation stipend. Participation is completely voluntary. You will receive a follow-up email with more information.

[list of campus/local resources]

Additionally, you have been automatically entered into a drawing for one of ten $50 MasterCard gift cards. The drawing will be conducted by researchers at the University of Michigan School of Public Health in Ann Arbor, Michigan in summer 2015. Winners will be notified by email and provided with information about how to collect the prize.

To provide feedback about this survey, please email the researchers at HealthyBodiesTeam@umich.edu.

SURVEY ENDING #4E: INTERVENTION CRITERIA MET (CONDITIONS C/D/G/H)

Thank you for completing this survey! Your participation will help inform programs and resources for [name of school] students. We also hope that taking this survey has been a valuable experience for you. As stated before you began the survey, all of your responses will remain confidential.

YOUR RESULTS

Based on your responses, you appear to have some concerns about your eating and body image. **According to clinical guidelines, you are considered to be at high risk for developing an eating disorder.**

PAID RESEARCH OPPORTUNITY

With this in mind, we would like to invite you to participate in a 12-week informational program designed to help [name of school] students take advantage of available services for eating and body image concerns. As part of the program, you will be asked to complete 6- and 12-week follow-up surveys, similar to the one you just completed. If you complete these assessments, you will receive a $15 participation stipend. Participation is completely voluntary. You will receive a follow-up email with more information.

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To provide feedback about this survey, please email the researchers at HealthyBodiesTeam@umich.edu.

WEEK 1 INTERVENTION MESSAGES

Group A, Group E2, and Group E3:

Subject: Invitation to Participate (stipend included)

Hi [name],

Thank you for completing the eating and body image survey.

We would like to invite you to participate in a 12-week online program designed to help [name of school] students take advantage of available services for eating and body image concerns.

What can you expect over the next 12 weeks?

[if Group A→]

- You will receive a weekly email containing information about resources for eating and body image concerns. You may opt-out of receiving emails at any time.
- You will also be asked to complete 6- and 12-week follow-up surveys, similar to the one you just completed. If you complete these, you will receive a **$15 MasterCard gift card**.

[if Group E2→]

- You may elect to receive a weekly email containing information about resources for eating and body image concerns. Next week you will be asked whether you would like to continue receiving the emails. You may also opt-out before then.
- Regardless of your preference, you will be asked to complete 6- and 12-week follow-up surveys, similar to the one you just completed. If you complete these, you will receive a **$15 MasterCard gift card**.

[if Group E3→]

- You will receive a weekly email containing information about resources for eating and body image concerns. After a few weeks, you will be asked whether you would like to continue receiving the emails. You may also opt-out at any time.
- Regardless of your preference, you will be asked to complete 6- and 12-week follow-up surveys, similar to the one you just completed. If you complete these, you will receive a **$15 MasterCard gift card**.

Why is it important to address eating and body image concerns?

Eating disorders typically develop between ages 19 and 25, making college a vulnerable time. **It is important to identify and support students at risk for developing eating disorders because symptoms—including negative thoughts about food and weight and unhealthy eating habits (such as restricting, binging, and purging)—typically persist or intensify if left untreated.**

Putting things in perspective…

The survey you just took included a commonly used eating disorder assessment, called the SCOFF. Scores on the SCOFF range from 0-5, with higher scores indicating higher levels of eating disorder symptoms. A score of ≥2 signals a likely eating disorder. Many students who screen positively for an eating disorder are surprised to learn that they are struggling much more than their peers. In a recent study of [6,979 undergraduate women/4,222 undergraduate men/11,268 undergraduates] the average score was [0.9/0.5/0.7]. **For students at risk for eating disorders, knowing their score, what it indicates, and how it compares to other students can be helpful in realizing the importance of seeking help.**

What resources are available?

We understand that seeking help is easier said than done. It can be difficult to know where to even begin looking for support. The Healthy Bodies Team has worked to simplify this process. We have created a customized document for [name of school] students containing information about resources for eating and body image concerns, which is available **HERE**. Contact information for [name(s) of local resource(s)] is also included below.

[list of campus/local resources]

This program is supported by the National Institutes of Health and aims to improve the lives of college students across the country. We hope that your continued participation will be helpful to you personally. Our goal is to support you.

Warmly,
The Healthy Bodies Team (link to http://healthybodiesstudy.org/research-team/)

If you have any questions or concerns about the study, please contact the researchers at HealthyBodiesTeam@umich.edu. Please note that this email address is not monitored 24/7 and is not monitored by mental health clinicians/counselors. Contact information for mental health services on your campus is included above. If you need help after normal business hours, call [campus after-hours/emergency counseling phone number].

Group B, Group F2, and Group F3:

Subject: Invitation to Participate (stipend included)

Hi [name],

Thank you for completing the eating and body image survey.

We would like to invite you to participate in a 12-week online program designed to help [name of school] students take advantage of available services for eating and body image concerns.

What can you expect over the next 12 weeks?

[if Group B→]

- You will receive a weekly email containing information about resources for eating and body image concerns. You may opt-out of receiving emails at any time.
- You will also be asked to complete 6- and 12-week follow-up surveys, similar to the one you just completed. If you complete these, you will receive a **$15 MasterCard gift card**.

[if Group F2→]

- You may elect to receive a weekly email containing information about resources for eating and body image concerns. Next week you will be asked whether you would like to continue receiving the emails. You may also opt-out before then.
- Regardless of your preference, you will be asked to complete 6- and 12-week follow-up surveys, similar to the one you just completed. If you complete these, you will receive a **$15 MasterCard gift card**.

[if Group F3→]

- You will receive a weekly email containing information about resources for eating and body image concerns. After a few weeks, you will be asked whether you would like to continue receiving the emails. You may also opt-out at any time.
- Regardless of your preference, you will be asked to complete 6- and 12-week follow-up surveys, similar to the one you just completed. If you complete these, you will receive a **$15 MasterCard gift card**.

Putting things in perspective…

The survey you just took included a commonly used eating disorder assessment, called the SCOFF. Scores on the SCOFF range from 0-5, with higher scores indicating higher levels of eating disorder symptoms. A score of ≥2 signals a likely eating disorder. Many students who screen positively for an eating disorder are surprised to learn that they are struggling much more than their peers. In a recent study of [6,979 undergraduate women/4,222 undergraduate men/11,268 undergraduates] the average score was [0.9/0.5/0.7]. **For students at risk for eating disorders, knowing their score, what it indicates, and how it compares to other students can be helpful in realizing the importance of seeking help.**

What resources are available?

We understand that seeking help is easier said than done. It can be difficult to know where to even begin looking for support. The Healthy Bodies Team has worked to simplify this process. We have created a customized document for [name of school] students containing information about resources for eating and body image concerns, which is available **HERE**. Contact information for [name(s) of local resource(s)] is also included below. If you address any concerns now, rather than waiting, this could make a big difference for your health and well-being.

[list of campus/local resources]

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mental health clinicians/counselors. Contact information for mental health services on your campus is included above. If you need help after normal business hours, call [campus after-hours/emergency counseling phone number].

Group C, Group G2, and Group G3:

Subject: Invitation to Participate (stipend included)

Hi [name],

Thank you for completing the eating and body image survey.

We would like to invite you to participate in a 12-week online program designed to help [name of school] students take advantage of available services for eating and body image concerns.

What can you expect over the next 12 weeks?

[if Group C→]

- You will receive a weekly email containing information about resources for eating and body image concerns. You may opt-out of receiving emails at any time.
- You will also be asked to complete 6- and 12-week follow-up surveys, similar to the one you just completed. If you complete these, you will receive a **$15 MasterCard gift card**.

[if Group G2→]

- You may elect to receive a weekly email containing information about resources for eating and body image concerns. Next week you will be asked whether you would like to continue receiving the emails. You may also opt-out before then.
- Regardless of your preference, you will be asked to complete 6- and 12-week follow-up surveys, similar to the one you just completed. If you complete these, you will receive a **$15 MasterCard gift card**.

[if Group G3→]

- You will receive a weekly email containing information about resources for eating and body image concerns. After a few weeks, you will be asked whether you would like to continue receiving the emails. You may also opt-out at any time.
- Regardless of your preference, you will be asked to complete 6- and 12-week follow-up surveys, similar to the one you just completed. If you complete these, you will receive a **$15 MasterCard gift card**.

Why is it important to address eating and body image concerns?

Eating disorders typically develop between ages 19 and 25, making college a vulnerable time. **It is important to identify and support students at risk for developing eating disorders because symptoms—including negative thoughts about food and weight and unhealthy eating habits (such as restricting, binging, and purging)—typically persist or intensify if left untreated.**

What resources are available?

We understand that seeking help is easier said than done. It can be difficult to know where to even begin looking for support. The Healthy Bodies Team has worked to simplify this process. We have created a customized document for [name of school] students containing information about resources for eating and body image concerns, which is available **HERE**. Contact information for [name(s) of local resource(s)] is also included below.

[list of campus/local resources]

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Group D, Group H2, and Group H3:

Subject: Invitation to Participate (stipend included)

Hi [name],

Thank you for completing the eating and body image survey.

We would like to invite you to participate in a 12-week online program designed to help [name of school] students take advantage of available services for eating and body image concerns.

What can you expect over the next 12 weeks?

[if Group D→]

- You will receive a weekly email containing information about resources for eating and body image concerns. You may opt-out of receiving emails at any time.
- You will also be asked to complete 6- and 12-week follow-up surveys, similar to the one you just completed. If you complete these, you will receive a **$15 MasterCard gift card**.

[if Group H2→]

- You may elect to receive a weekly email containing information about resources for eating and body image concerns. Next week you will be asked whether you would like to continue receiving the emails. You may also opt-out before then.
- Regardless of your preference, you will be asked to complete 6- and 12-week follow-up surveys, similar to the one you just completed. If you complete these, you will receive a **$15 MasterCard gift card**.

[if Group H3→]

- You will receive a weekly email containing information about resources for eating and body image concerns. After a few weeks, you will be asked whether you would like to continue receiving the emails. You may also opt-out at any time.
- Regardless of your preference, you will be asked to complete 6- and 12-week follow-up surveys, similar to the one you just completed. If you complete these, you will receive a **$15 MasterCard gift card**.

What resources are available?

We understand that seeking help is easier said than done. It can be difficult to know where to even begin looking for support. The Healthy Bodies Team has worked to simplify this process. We have created a customized document for [name of school] students containing information about resources for eating and body image concerns, which is available **HERE**. Contact information for [name(s) of local resource(s)] is also included below. If you address any concerns now, rather than waiting, this could make a big difference for your health and well-being.

[list of campus/local resources]

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Group E1:

Subject: Invitation to Participate (stipend included)

Hi [name],

Thank you for completing the eating and body image survey.

We would like to invite you to participate in a 12-week online program designed to help [name of school] students take advantage of available services for eating and body image concerns.

What can you expect over the next 12 weeks?

- You may elect to receive a weekly email containing information about resources for eating and body image concerns.
- You will also be asked to complete 6- and 12-week follow-up surveys, similar to the one you just completed. If you complete these, you will receive a **$15 MasterCard gift card.**

If you would like to continue to receive weekly emails about local resources and services, PLEASE CLICK HERE: [link to opt-in]. Regardless of your preference, you will still be invited to participate in the 6- and 12-week follow-up assessments, which are required in order to receive your participation stipend.

Why is it important to address eating and body image concerns?

Eating disorders typically develop between ages 19 and 25, making college a vulnerable time. **It is important to identify and support students at risk for developing eating disorders because symptoms—including negative thoughts about food and weight and unhealthy eating habits (such as restricting, binging, and purging)—typically persist or intensify if left untreated.**

Putting things in perspective…

The survey you just took included a commonly used eating disorder assessment, called the SCOFF. Scores on the SCOFF range from 0-5, with higher scores indicating higher levels of eating disorder symptoms. A score of ≥2 signals a likely eating disorder. Many students who screen positively for an eating disorder are surprised to learn that they are struggling much more than their peers. In a recent study of [6,979 undergraduate women/4,222 undergraduate men/11,268 undergraduates] the average score was [0.9/0.5/0.7]. **For students at risk for eating disorders, knowing their score, what it indicates, and how it compares to other students can be helpful in realizing the importance of seeking help.**

What resources are available?

We understand that seeking help is easier said than done. It can be difficult to know where to even begin looking for support. The Healthy Bodies Team has worked to simplify this process. We have created a customized document for [name of school] students containing information about resources for eating and body image concerns, which is available **HERE**. Contact information for [name(s) of local resource(s)] is also included below.

[list of campus/local resources]

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Group F1:

Subject: Invitation to Participate (stipend included)

Hi [name],

Thank you for completing the eating and body image survey.

We would like to invite you to participate in a 12-week online program designed to help [name of school] students take advantage of available services for eating and body image concerns.

What can you expect over the next 12 weeks?

- You may elect to receive a weekly email containing information about resources for eating and body image concerns.
- You will also be asked to complete 6- and 12-week follow-up surveys, similar to the one you just completed. If you complete these, you will receive a **$15 MasterCard gift card.**

If you would like to continue to receive weekly emails about local resources and services, PLEASE CLICK HERE: [link to opt-in]. Regardless of your preference, you will still be invited to participate in the 6- and 12-week follow-up assessments, which are required in order to receive your participation stipend.

Putting things in perspective…

The survey you just took included a commonly used eating disorder assessment, called the SCOFF. Scores on the SCOFF range from 0-5, with higher scores indicating higher levels of eating disorder symptoms. A score of ≥2 signals a likely eating disorder. Many students who screen positively for an eating disorder are surprised to learn that they are struggling much more than their peers. In a recent study of [6,979 undergraduate women/4,222 undergraduate men/11,268 undergraduates] the average score was [0.9/0.5/0.7]. **For students at risk for eating disorders, knowing their score, what it indicates, and how it compares to other students can be helpful in realizing the importance of seeking help.**

What resources are available?

We understand that seeking help is easier said than done. It can be difficult to know where to even begin looking for support. The Healthy Bodies Team has worked to simplify this process. We have created a customized document for [name of school] students containing information about resources for eating and body image concerns, which is available **HERE**. Contact information for [name(s) of local resource(s)] is also included below. If you address any concerns now, rather than waiting, this could make a big difference for your health and well-being.

[list of campus/local resources]

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Group G1:

Subject: Invitation to Participate (stipend included)

Hi [name],

Thank you for completing the eating and body image survey.

We would like to invite you to participate in a 12-week online program designed to help [name of school] students take advantage of available services for eating and body image concerns.

What can you expect over the next 12 weeks?

- You may elect to receive a weekly email containing information about resources for eating and body image concerns.
- You will also be asked to complete 6- and 12-week follow-up surveys, similar to the one you just completed. If you complete these, you will receive a **$15 MasterCard gift card.**

If you would like to continue to receive weekly emails about local resources and services, PLEASE CLICK HERE: [link to opt-in]. Regardless of your preference, you will still be invited to participate in the 6- and 12-week follow-up assessments, which are required in order to receive your participation stipend.

Why is it important to address eating and body image concerns?

Eating disorders typically develop between ages 19 and 25, making college a vulnerable time. **It is important to identify and support students at risk for developing eating disorders because symptoms—including negative thoughts about food and weight and unhealthy eating habits (such as restricting, binging, and purging)—typically persist or intensify if left untreated.**

What resources are available?

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[list of campus/local resources]

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Group H1:

Subject: Invitation to Participate (stipend included)

Hi [name],

Thank you for completing the eating and body image survey.

We would like to invite you to participate in a 12-week online program designed to help [name of school] students take advantage of available services for eating and body image concerns.

What can you expect over the next 12 weeks?

- You may elect to receive a weekly email containing information about resources for eating and body image concerns.
- You will also be asked to complete 6- and 12-week follow-up surveys, similar to the one you just completed. If you complete these, you will receive a **$15 MasterCard gift card.**

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What resources are available?

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[list of campus/local resources]

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Warmly,
The Healthy Bodies Team (link to http://healthybodiesstudy.org/research-team/)

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WEEK 2 INTERVENTION MESSAGES

Group A, Group E1 opt-ins, and Group E3:

Subject: Resources and Information from the Healthy Bodies Team

[name],

Thank you for your continued participation in the 12-week program designed to help [name of school] students take advantage of available services for eating and body image concerns. It's great that you elected to continue receiving weekly emails with information about resources and the importance of seeking help.

Do habits and attitudes impair your life?

Thoughts and fears about food and weight create increased risk for developing an eating disorder. What's more, mental energy spent worrying about eating, shape and weight may negatively impact your life, including by: [making it difficult to concentrate, making you feel critical about yourself, stopping you going out with others, affecting your academic performance, making you forgetful, affecting your ability to make everyday decisions, interfering with meals with family or friends, making you upset, making you feel ashamed of yourself, making it difficult to eat out with others, making you feel guilty, interfering with you doing things you used to enjoy, making you absent-minded, making you feel a failure, interfering with your relationships with others, and making you worry].

Changing the way you think about these things can be difficult and help is commonly needed. As you reflect more about the ways in which eating and body image concerns may be impacting your life, we hope that you'll consider the importance of seeking help now. **Risk for developing an eating disorder increases the longer one goes without receiving help.**

Compared to your peer group…

The survey you recently took included the Weight Concerns Scale (WCS), which is commonly used to assess body image concerns and identify individuals at risk for an eating disorder. Scores range from 0-100, with higher scores indicating higher levels of concern. A score of ≥47 signals a likely eating disorder. In a recent study of [703 undergraduate women/320 undergraduate men/1,033 undergraduates] the average score was [39.7/28.2/34.2], which is well below the cut-off for an eating disorder. **Many students who screen positively for an eating disorder are often surprised to learn that they are struggling much more than other students. Sometimes realizing this can be the push needed to seek help.**

Available resources

The Healthy Bodies Team has created a customized document for [name of school] students containing resources for eating and body image concerns. For a copy of this document, which you can save or print, click **HERE**! Contact information for [name(s) of local resource(s)] is also included below.

[list of campus/local resources]

About [local resource #1]

[PICTURE OF COUNSELING CENTER WITH NAME]

[Detailed information about the counseling center (available resources and ways of utilizing these resources)]

Take care,
The Healthy Bodies Team (link to http://healthybodiesstudy.org/research-team/)

If you have any questions or concerns about the study, please contact the researchers at HealthyBodiesTeam@umich.edu. Please note that this email address is not monitored 24/7 and is not monitored by mental health clinicians/counselors. Contact information for mental health services on your campus is included above. If you need help after normal business hours, call [campus after-hours/emergency counseling phone number].

Group B, Group F1 opt-ins, and Group F3:

Subject: Resources and Information from the Healthy Bodies Team

[name],

Thank you for your continued participation in the 12-week program designed to help [name of school] students take advantage of available services for eating and body image concerns. It's great that you elected to continue receiving weekly emails with information about resources and the importance of seeking help.

Why seek help?

Fears about food and weight create increased risk for developing an eating disorder. Without these negative thoughts it is possible to focus more on all of the social and academic experiences that make college such a special time. Creating and maintaining a healthy and positive attitude related to eating and body image can be difficult and help is commonly needed. The sooner you address any concerns, the sooner you can fully embrace all the opportunities available to you.

Compared to your peer group…

The survey you recently took included the Weight Concerns Scale (WCS), which is commonly used to assess body image concerns and identify individuals at risk for an eating disorder. Scores range from 0-100, with higher scores indicating higher levels of concern. A score of ≥47 signals a likely eating disorder. In a recent study of [703 undergraduate women/320 undergraduate men/1,033 undergraduates] the average score was [39.7/28.2/34.2], which is well below the cut-off for an eating disorder. **Many students who screen positively for an eating disorder are often surprised to learn that they are struggling much more than other students. Sometimes realizing this can be the push needed to seek help.**

Available resources

The Healthy Bodies Team has created a customized document for [name of school] students containing resources for eating and body image concerns. For a copy of this document, which you can save or print, click **HERE**! Contact information for [name(s) of local resource(s)] is also included below.

[list of campus/local resources]

About [local resource #1]

[PICTURE OF COUNSELING CENTER WITH NAME]

[Detailed information about the counseling center (available resources and ways of utilizing these resources)]

Take care,
The Healthy Bodies Team (link to http://healthybodiesstudy.org/research-team/)

If you have any questions or concerns about the study, please contact the researchers at HealthyBodiesTeam@umich.edu. Please note that this email address is not monitored 24/7 and is not monitored by mental health clinicians/counselors. Contact information for mental health services on your campus is included above. If you need help after normal business hours, call [campus after-hours/emergency counseling phone number].

Group C, Group G1 opt-ins, and Group G3:

Subject: Resources and Information from the Healthy Bodies Team

[name],

Thank you for your continued participation in the 12-week program designed to help [name of school] students take advantage of available services for eating and body image concerns. It's great that you elected to continue receiving weekly emails with information about resources and the importance of seeking help.

Do habits and attitudes impair your life?

Thoughts and fears about food and weight create increased risk for developing an eating disorder. What's more, mental energy spent worrying about eating, shape and weight may negatively impact your life, including by: [making it difficult to concentrate, making you feel critical about yourself, stopping you going out with others, affecting your academic performance, making you forgetful, affecting your ability to make everyday decisions, interfering with meals with family or friends, making you upset, making you feel ashamed of yourself, making it difficult to eat out with others, making you feel guilty, interfering with you doing things you used to enjoy, making you absent-minded, making you feel a failure, interfering with your relationships with others, and making you worry].

Changing the way you think about these things can be difficult and help is commonly needed. As you reflect more about the ways in which eating and body image concerns may be impacting your life, we hope that you'll consider the importance of seeking help now. **Risk for developing an eating disorder increases the longer one goes without receiving help.**

Available resources

The Healthy Bodies Team has created a customized document for [name of school] students containing resources for eating and body image concerns. For a copy of this document, which you can save or print, click **HERE**! Contact information for [name(s) of local resource(s)] is also included below.

[list of campus/local resources]

About [local resource #1]

[PICTURE OF COUNSELING CENTER WITH NAME]

[Detailed information about the counseling center (available resources and ways of utilizing these resources)]

Take care,
The Healthy Bodies Team (link to http://healthybodiesstudy.org/research-team/)

If you have any questions or concerns about the study, please contact the researchers at HealthyBodiesTeam@umich.edu. Please note that this email address is not monitored 24/7 and is not monitored by mental health clinicians/counselors. Contact information for mental health services on your campus is included above. If you need help after normal business hours, call [campus after-hours/emergency counseling phone number].

Group D, Group H1 opt-ins, and Group H3:

Subject: Resources and Information from the Healthy Bodies Team

[name],

Thank you for your continued participation in the 12-week program designed to help [name of school] students take advantage of available services for eating and body image concerns. It's great that you elected to continue receiving weekly emails with information about resources and the importance of seeking help.

Why seek help?

Fears about food and weight create increased risk for developing an eating disorder. Without these negative thoughts it is possible to focus more on all of the social and academic experiences that make college such a special time. Creating and maintaining a healthy and positive attitude related to eating and body image can be difficult and help is commonly needed. The sooner you address any concerns, the sooner you can fully embrace all the opportunities available to you.

Available resources

The Healthy Bodies Team has created a customized document for [name of school] students containing resources for eating and body image concerns. For a copy of this document, which you can save or print, click **HERE**! Contact information for [name(s) of local resource(s)] is also included below.

[list of campus/local resources]

About [local resource #1]

[PICTURE OF COUNSELING CENTER WITH NAME]

[Detailed information about the counseling center (available resources and ways of utilizing these resources)]

Take care,
The Healthy Bodies Team (link to http://healthybodiesstudy.org/research-team/)

If you have any questions or concerns about the study, please contact the researchers at HealthyBodiesTeam@umich.edu. Please note that this email address is not monitored 24/7 and is not monitored by mental health clinicians/counselors. Contact information for mental health services on your campus is included above. If you need help after normal business hours, call [campus after-hours/emergency counseling phone number].

Group E2:

Subject: Resources and Information from the Healthy Bodies Team

[name],

Thank you for your continued participation in the 12-week program designed to help [name of school] students take advantage of available services for eating and body image concerns. **If you would like to continue to receive weekly emails, PLEASE CLICK HERE: [link to opt-in].** Regardless of your preference, you will still be invited to participate in the 6- and 12-week follow-up assessments, which are required in order to receive your participation stipend.

Do habits and attitudes impair your life?

Thoughts and fears about food and weight create increased risk for developing an eating disorder. What's more, mental energy spent worrying about eating, shape and weight may negatively impact your life, including by: [making it difficult to concentrate, making you feel critical about yourself, stopping you going out with others, affecting your academic performance, making you forgetful, affecting your ability to make everyday decisions, interfering with meals with family or friends, making you upset, making you feel ashamed of yourself, making it difficult to eat out with others, making you feel guilty, interfering with you doing things you used to enjoy, making you absent-minded, making you feel a failure, interfering with your relationships with others, and making you worry].

Changing the way you think about these things can be difficult and help is commonly needed. As you reflect more about the ways in which eating and body image concerns may be impacting your life, we hope that you'll consider the importance of seeking help now. **Risk for developing an eating disorder increases the longer one goes without receiving help.**

Compared to your peer group…

The survey you recently took included the Weight Concerns Scale (WCS), which is commonly used to assess body image concerns and identify individuals at risk for an eating disorder. Scores range from 0-100, with higher scores indicating higher levels of concern. A score of ≥47 signals a likely eating disorder. In a recent study of [703 undergraduate women/320 undergraduate men/1,033 undergraduates] the average score was [39.7/28.2/34.2], which is well below the cut-off for an eating disorder. **Many students who screen positively for an eating disorder are often surprised to learn that they are struggling much more than other students. Sometimes realizing this can be the push needed to seek help.**

Available resources

The Healthy Bodies Team has created a customized document for [name of school] students containing resources for eating and body image concerns. For a copy of this document, which you can save or print, click **HERE**! Contact information for [name(s) of local resource(s)] is also included below.

[list of campus/local resources]

About [local resource #1]

[PICTURE OF COUNSELING CENTER WITH NAME]

[Detailed information about the counseling center (available resources and ways of utilizing these resources)]

Take care,
The Healthy Bodies Team (link to http://healthybodiesstudy.org/research-team/)

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Group F2:

Subject: Resources and Information from the Healthy Bodies Team

[name],

Thank you for your continued participation in the 12-week program designed to help [name of school] students take advantage of available services for eating and body image concerns. **If you would like to continue to receive weekly emails, PLEASE CLICK HERE: [link to opt-in].** Regardless of your preference, you will still be invited to participate in the 6- and 12-week follow-up assessments, which are required in order to receive your participation stipend.

Why seek help?

Fears about food and weight create increased risk for developing an eating disorder. Without these negative thoughts it is possible to focus more on all of the social and academic experiences that make college such a special time. Creating and maintaining a healthy and positive attitude related to eating and body image can be difficult and help is commonly needed. The sooner you address any concerns, the sooner you can fully embrace all the opportunities available to you.

Compared to your peer group…

The survey you recently took included the Weight Concerns Scale (WCS), which is commonly used to assess body image concerns and identify individuals at risk for an eating disorder. Scores range from 0-100, with higher scores indicating higher levels of concern. A score of ≥47 signals a likely eating disorder. In a recent study of [703 undergraduate women/320 undergraduate men/1,033 undergraduates] the average score was [39.7/28.2/34.2], which is well below the cut-off for an eating disorder. **Many students who screen positively for an eating disorder are often surprised to learn that they are struggling much more than other students. Sometimes realizing this can be the push needed to seek help.**

Available resources

The Healthy Bodies Team has created a customized document for [name of school] students containing resources for eating and body image concerns. For a copy of this document, which you can save or print, click **HERE**! Contact information for [name(s) of local resource(s)] is also included below.

[list of campus/local resources]

About [local resource #1]

[PICTURE OF COUNSELING CENTER WITH NAME]

[Detailed information about the counseling center (available resources and ways of utilizing these resources)]

Take care,
The Healthy Bodies Team (link to http://healthybodiesstudy.org/research-team/)

If you have any questions or concerns about the study, please contact the researchers at HealthyBodiesTeam@umich.edu. Please note that this email address is not monitored 24/7 and is not monitored by mental health clinicians/counselors. Contact information for mental health services on your campus is included above. If you need help after normal business hours, call [campus after-hours/emergency counseling phone number].

Group G2:

Subject: Resources and Information from the Healthy Bodies Team

[name],

Thank you for your continued participation in the 12-week program designed to help [name of school] students take advantage of available services for eating and body image concerns. **If you would like to continue to receive weekly emails, PLEASE CLICK HERE: [link to opt-in].** Regardless of your preference, you will still be invited to participate in the 6- and 12-week follow-up assessments, which are required in order to receive your participation stipend.

Do habits and attitudes impair your life?

Thoughts and fears about food and weight create increased risk for developing an eating disorder. What's more, mental energy spent worrying about eating, shape and weight may negatively impact your life, including by: [making it difficult to concentrate, making you feel critical about yourself, stopping you going out with others, affecting your academic performance, making you forgetful, affecting your ability to make everyday decisions, interfering with meals with family or friends, making you upset, making you feel ashamed of yourself, making it difficult to eat out with others, making you feel guilty, interfering with you doing things you used to enjoy, making you absent-minded, making you feel a failure, interfering with your relationships with others, and making you worry].

Changing the way you think about these things can be difficult and help is commonly needed. As you reflect more about the ways in which eating and body image concerns may be impacting your life, we hope that you'll consider the importance of seeking help now. **Risk for developing an eating disorder increases the longer one goes without receiving help.**

Available resources

The Healthy Bodies Team has created a customized document for [name of school] students containing resources for eating and body image concerns. For a copy of this document, which you can save or print, click **HERE**! Contact information for [name(s) of local resource(s)] is also included below.

[list of campus/local resources]

About [local resource #1]

[PICTURE OF COUNSELING CENTER WITH NAME]

[Detailed information about the counseling center (available resources and ways of utilizing these resources)]

Take care,
The Healthy Bodies Team (link to http://healthybodiesstudy.org/research-team/)

If you have any questions or concerns about the study, please contact the researchers at HealthyBodiesTeam@umich.edu. Please note that this email address is not monitored 24/7 and is not monitored by mental health clinicians/counselors. Contact information for mental health services on your campus is included above. If you need help after normal business hours, call [campus after-hours/emergency counseling phone number].

Group H2:

Subject: Resources and Information from the Healthy Bodies Team

[name],

Thank you for your continued participation in the 12-week program designed to help [name of school] students take advantage of available services for eating and body image concerns. **If you would like to continue to receive weekly emails, PLEASE CLICK HERE: [link to opt-in].** Regardless of your preference, you will still be invited to participate in the 6- and 12-week follow-up assessments, which are required in order to receive your participation stipend.

Why seek help?

Fears about food and weight create increased risk for developing an eating disorder. Without these negative thoughts it is possible to focus more on all of the social and academic experiences that make college such a special time. Creating and maintaining a healthy and positive attitude related to eating and body image can be difficult and help is commonly needed. The sooner you address any concerns, the sooner you can fully embrace all the opportunities available to you.

Available resources

The Healthy Bodies Team has created a customized document for [name of school] students containing resources for eating and body image concerns. For a copy of this document, which you can save or print, click **HERE**! Contact information for [name(s) of local resource(s)] is also included below.

[list of campus/local resources]

About [local resource #1]

[PICTURE OF COUNSELING CENTER WITH NAME]

[Detailed information about the counseling center (available resources and ways of utilizing these resources)]

Take care,
The Healthy Bodies Team (link to http://healthybodiesstudy.org/research-team/)

If you have any questions or concerns about the study, please contact the researchers at HealthyBodiesTeam@umich.edu. Please note that this email address is not monitored 24/7 and is not monitored by mental health clinicians/counselors. Contact information for mental health services on your campus is included above. If you need help after normal business hours, call [campus after-hours/emergency counseling phone number].

WEEK 3 INTERVENTION MESSAGES

Group A, Group C, Group E1 opt-ins, Group E2 opt-ins, Group G1 opt-ins, and Group G2 opt-ins:

Subject: Your Weekly Email from the Healthy Bodies Team

Hello [name],

Thank you for your continued participation in the 12-week program designed to help [name of school] students take advantage of available services for eating and body image concerns. We are now in the third week of the program and are writing to provide important information that we hope you will consider.

You should know

It is important to identify and support students with eating disorder symptoms because there are serious short- and long-term negative health consequences associated with these symptoms. Short-term consequences include hair loss/thinning, while long-term effects include muscle weakness and bone loss. In other words, **not seeking help creates increased risk for significant health problems, now and in the future.**

Take the next step to seek help

Given the information above, we urge students in need to take advantage of available services as soon as possible. These include:

[list of campus/local resources]

Where can I receive support on my campus?
The Healthy Bodies Team has created a customized document with detailed information about eating and body image resources on your campus. For a copy of this document, which you can save or print, please click **HERE**!

About [local resource #2]

[PICTURE OF LOCAL RESOURCE #2 WITH NAME]

[Detailed information about local resource #2 (typically the campus health service) (available resources and ways of utilizing these resources)]

If you have recently begun receiving services, we hope this has been helpful and continues to be.

Wishing you the best,
The Healthy Bodies Team (link to http://healthybodiesstudy.org/research-team/)

If you have any questions or concerns about the study, please contact the researchers at HealthyBodiesTeam@umich.edu. Please note that this email address is not monitored 24/7 and is not monitored by mental health clinicians/counselors. Contact information for mental health services on your campus is included above. If you need help after normal business hours, call [campus after-hours/emergency counseling phone number].

Group B, Group D, Group F1 opt-ins, Group F2 opt-ins, Group H1 opt-ins, and Group H2 opt-ins:

Subject: Your Weekly Email from the Healthy Bodies Team

Hello [name],

Thank you for your continued participation in the 12-week program designed to help [name of school] students take advantage of available services for eating and body image concerns. We are now in the third week of the program and are writing to provide important information that we hope you will consider.

Take the next step to seek help

It is important to identify and support students who are considered to be at high risk for developing an eating disorder. If you address any concerns now, rather than waiting, this could make a big difference for your health and well-being. With this in mind, we urge students in need to take advantage of available services as soon as possible. These include:

[list of campus/local resources]

Where can I receive support on my campus?
The Healthy Bodies Team has created a customized document with detailed information about eating and body image resources on your campus. For a copy of this document, which you can save or print, please click **HERE**!

About [local resource #2]

[PICTURE OF LOCAL RESOURCE #2 WITH NAME]

[Detailed information about local resource #2 (typically the campus health service) (available resources and ways of utilizing these resources)]

If you have recently begun receiving services, we hope this has been helpful and continues to be.

Wishing you the best,
The Healthy Bodies Team (link to http://healthybodiesstudy.org/research-team/)

If you have any questions or concerns about the study, please contact the researchers at HealthyBodiesTeam@umich.edu. Please note that this email address is not monitored 24/7 and is not monitored by mental health clinicians/counselors. Contact information for mental health services on your campus is included above. If you need help after normal business hours, call [campus after-hours/emergency counseling phone number].

Group E3 and Group G3:

Subject: Your Weekly Email from the Healthy Bodies Team

Hello [name],

Thank you for your continued participation in the 12-week program designed to help [name of school] students take advantage of available services for eating and body image concerns. We are now in the third week of the program. **If you would like to continue to receive weekly emails, PLEASE CLICK HERE: [link to opt-in].** Regardless of your preference, you will still be invited to participate in the 6- and 12-week follow-up assessments, which are required in order to receive your participation stipend.

You should know

It is important to identify and support students with eating disorder symptoms because there are serious short- and long-term negative health consequences associated with these symptoms. Short-term consequences include hair loss/thinning, while long-term effects include muscle weakness and bone loss. In other words, **not seeking help creates increased risk for significant health problems, now and in the future.**

Take the next step to seek help

Given the information above, we urge students in need to take advantage of available services as soon as possible. These include:

[list of campus/local resources]

Where can I receive support on my campus?
The Healthy Bodies Team has created a customized document with detailed information about eating and body image resources on your campus. For a copy of this document, which you can save or print, please click **HERE**!

About [local resource #2]

[PICTURE OF LOCAL RESOURCE #2 WITH NAME]

[Detailed information about local resource #2 (typically the campus health service) (available resources and ways of utilizing these resources)]

If you have recently begun receiving services, we hope this has been helpful and continues to be.

Wishing you the best,
The Healthy Bodies Team (link to http://healthybodiesstudy.org/research-team/)

If you have any questions or concerns about the study, please contact the researchers at HealthyBodiesTeam@umich.edu. Please note that this email address is not monitored 24/7 and is not monitored by mental health clinicians/counselors. Contact information for mental health services on your campus is included above. If you need help after normal business hours, call [campus after-hours/emergency counseling phone number].

Group F3 and Group H3:

Subject: Your Weekly Email from the Healthy Bodies Team

Hello [name],

Thank you for your continued participation in the 12-week program designed to help [name of school] students take advantage of available services for eating and body image concerns. We are now in the third week of the program. **If you would like to continue to receive weekly emails, PLEASE CLICK HERE: [link to opt-in].** Regardless of your preference, you will still be invited to participate in the 6- and 12-week follow-up assessments, which are required in order to receive your participation stipend.

Take the next step to seek help

It is important to identify and support students who are considered to be at high risk for developing an eating disorder. If you address any concerns now, rather than waiting, this could make a big difference for your health and well-being. With this in mind, we urge students in need to take advantage of available services as soon as possible. These include:

[list of campus/local resources]

Where can I receive support on my campus?
The Healthy Bodies Team has created a customized document with detailed information about eating and body image resources on your campus. For a copy of this document, which you can save or print, please click **HERE**!

About [local resource #2]

[PICTURE OF LOCAL RESOURCE #2 WITH NAME]

[Detailed information about local resource #2 (typically the campus health service) (available resources and ways of utilizing these resources)]

If you have recently begun receiving services, we hope this has been helpful and continues to be.

Wishing you the best,
The Healthy Bodies Team (link to http://healthybodiesstudy.org/research-team/)

If you have any questions or concerns about the study, please contact the researchers at HealthyBodiesTeam@umich.edu. Please note that this email address is not monitored 24/7 and is not monitored by mental health clinicians/counselors. Contact information for mental health services on your campus is included above. If you need help after normal business hours, call [campus after-hours/emergency counseling phone number].

WEEK 4 INTERVENTION MESSAGES

Group A/C/E/G*:
***Only opt-ins from E1, E2, E3, G1, G2, G3**

Subject: Help for Eating and Body Image Concerns at [name of school]

Hey [name],

Thank you for your continued participation in the 12-week program designed to help [name of school] students take advantage of available services for eating and body image concerns. We are now in the fourth week of the program and are writing to provide important information that we hope you will consider.

[if binging behavior reported at baseline→]

Do you know the dangers associated with binge eating?

Binge eating—a pattern of disordered eating, which consists of episodes of uncontrollable eating—is often accompanied by feelings of shame, guilt, and secrecy. There are also many serious health risks associated with binge eating, including: high blood pressure, high cholesterol levels, heart disease, Type II diabetes, gallbladder disease, and potential for gastric rupture during periods of binging.

[if purging behavior reported at baseline→]

Do you know the dangers associated with purging?

Purging behaviors—vomiting, laxative abuse, diuretics, excessive exercise, etc.—can be dangerous and lead to serious medical complications. Some of the health consequences of these behaviors include: inflammation and possible rupture of the esophagus from vomiting, tooth decay and staining from stomach acids released during vomiting, chronic irregular bowel movements and constipation, peptic ulcers and pancreatitis, and electrolyte imbalances that can lead to irregular heartbeats and possibly heart failure.

[if binging and purging behavior reported at baseline→]

Do you know the dangers associated with binging and purging?

Binging and purging can affect the entire digestive system and can lead to electrolyte and chemical imbalances in the body that affect the heart and other major organ functions. Some of the health consequences include: potential for gastric rupture during periods of binging, inflammation and possible rupture of the esophagus from vomiting, tooth decay and staining from stomach acids released during vomiting, chronic irregular bowel movements and constipation, peptic ulcers and pancreatitis, and electrolyte imbalances that can lead to irregular heartbeats and possibly heart failure.

[if neither binging nor purging behavior reported at baseline→]

Why is it important to address eating and body image concerns?

It is important to identify and support students who are considered to be clinically 'at risk' for developing an eating disorder. Without help, symptoms tend to persist or intensify. Over time, symptoms often become increasingly resistant to treatment. In other words, not seeking help now may lead to more complicated physical and emotional health problems in the future.

Help is here

There are multiple campus resources, which are described in detail **HERE**. Basic information about [name(s) of local resource(s)] is also listed below.

[list of campus/local resources]

If you are now receiving help, we hope this has been and will continue to be a positive experience for you.

Be well,

The Healthy Bodies Team (link to http://healthybodiesstudy.org/research-team/)

If you have any questions or concerns about the study, please contact the researchers at HealthyBodiesTeam@umich.edu. Please note that this email address is not monitored 24/7 and is not monitored by mental health clinicians/counselors. Contact information for mental health services on your campus is included above. If you need help after normal business hours, call [campus after-hours/emergency counseling phone number].

Group B/D/F/H*:
***Only opt-ins from F1, F2, F3, H1, H2, H3**

Subject: Help for Eating and Body Image Concerns at [name of school]

Hey [name],

Thank you for your continued participation in the 12-week program designed to help [name of school] students take advantage of available services for eating and body image concerns. We are now in the fourth week of the program and are writing to provide important information that we hope you will consider.

Start feeling in control

[if binging behavior reported at baseline→]

Many people who engage in binge eating wish to be in control of their eating behaviors. Therapy, such as cognitive behavioral therapy, has been demonstrated to be effective in reducing binge eating.

[if purging behavior reported at baseline→]

Many people who engage in purging behaviors wish they could stop. Therapy, such as cognitive behavioral therapy, has been demonstrated to be effective in reducing purging.

[if binging and purging behavior reported at baseline→]

Many people who engage in binging and purging wish they could stop. Therapy, such as cognitive behavioral therapy, has been demonstrated to be effective in reducing both binging and purging.

[if neither binging nor purging behavior reported at baseline→]

Why is it important to address eating and body image concerns?

It is important to identify and support students who engage in disordered eating and/or experience preoccupation with body shape and weight. These symptoms are considered by many clinical experts to be serious issues requiring help. If you address any concerns now, rather than waiting, this could make a big difference for your health and well-being.

Help is here

There are multiple campus resources, which are described in detail **HERE**. Basic information about [name(s) of local resource(s)] is also listed below.

[list of campus/local resources]

If you are now receiving help, we hope this has been and will continue to be a positive experience for you.

Be well,
The Healthy Bodies Team (link to http://healthybodiesstudy.org/research-team/)

If you have any questions or concerns about the study, please contact the researchers at HealthyBodiesTeam@umich.edu. Please note that this email address is not monitored 24/7 and is not monitored by mental health clinicians/counselors. Contact information for mental health services on your campus is included above. If you need help after normal business hours, call [campus after-hours/emergency counseling phone number].

WEEK 5 INTERVENTION MESSAGES

Group A/C/E/G*:
***Only opt-ins from E1, E2, E3, G1, G2, G3**

Subject: Support for [name of school] students from the Healthy Bodies Team

Dear [name],

Thank you for your continued participation in the 12-week program designed to help [name of school] students take advantage of available services for eating and body image concerns. We are now in the fifth week of the program and are writing to provide important information that we hope you will consider.

What's stopping you from getting help?

Disordered eating and negative thoughts about food and weight are considered by clinical experts to be serious issues requiring professional help. As symptoms persist and intensify over time, the stakes become greater because physical and emotional health is often compromised. Many people who recover from eating disorders regret that they did not get treatment sooner. We hope you realize how important it is to address any reasons that might be preventing you from seeking help. As a participant in this program, now is one of the most convenient opportunities to address any concerns.

The time is now to seek help!

Please consider [name(s) of local resource(s)] or any of the other [name of school] resources outlined **HERE**.

[list of campus/local resources]

If you have recently started counseling or therapy, we hope this has been beneficial and continues to be!

Kind regards,
The Healthy Bodies Team (link to http://healthybodiesstudy.org/research-team/)

If you have any questions or concerns about the study, please contact the researchers at HealthyBodiesTeam@umich.edu. Please note that this email address is not monitored 24/7 and is not monitored by mental health clinicians/counselors. Contact information for mental health services on your campus is included above. If you need help after normal business hours, call [campus after-hours/emergency counseling phone number].

Group B/D/F/H*:
***Only opt-ins from F1, F2, F3, H1, H2, H3**

Subject: Support for [name of school] students from the Healthy Bodies Team

Dear [name],

Thank you for your continued participation in the 12-week program designed to help [name of school] students take advantage of available services for eating and body image concerns. We are now in the fifth week of the program and are writing to provide important information that we hope you will consider.

The time is now to seek help!

It is important to identify and support students who engage in disordered eating and/or experience preoccupation with body shape and weight. These symptoms are considered by many clinical experts to be serious issues requiring help. If you address any concerns now, rather than waiting, this could make a big difference for your health and well-being. Please consider [name(s) of local resource(s)] or any of the other [name of school] resources outlined **HERE**.

[list of campus/local resources]

If you have recently started counseling or therapy, we hope this has been beneficial and continues to be!

Kind regards,
The Healthy Bodies Team (link to http://healthybodiesstudy.org/research-team/)

If you have any questions or concerns about the study, please contact the researchers at HealthyBodiesTeam@umich.edu. Please note that this email address is not monitored 24/7 and is not monitored by mental health clinicians/counselors. Contact information for mental health services on your campus is included above. If you need help after normal business hours, call [campus after-hours/emergency counseling phone number].

WEEK 6 INTERVENTION MESSAGES

Group A/C/E/G*:
***Only opt-ins from E1, E2, E3, G1, G2, G3**

Subject: Your Weekly Email from the Healthy Bodies Team (week 6)

Hi there, [name],

Thank you for your continued participation in the 12-week program designed to help [name of school] students take advantage of available services for eating and body image concerns. We are now in the sixth week of the program and are writing to provide important information that we hope you will consider.

Why seek help?

In the U.S., 20 million women and 10 million men suffer from a clinical or subclinical eating disorder at some point in their lives, including anorexia, bulimia, and binge eating disorder. **Eating disorders have the highest mortality rate of any mental health problem and age of first onset is 19-25 years old. Most eating disorders develop during the college years, making college a very vulnerable time. As such, it is important to identify and support students who are considered 'at-risk', according to clinical guidelines. Susceptibility for developing an eating disorder increases the longer one goes without seeking help.**

Support is available

Given the information above, we encourage students in need to utilize resources available at [name of school]. These resources have been compiled into a single document, which is available **HERE**. Information about [name(s) of local resource(s)] is also included below.

[list of campus/local resources]

As you know, this program involves 6- and 12-week follow-up assessments (brief online surveys). **Participation in these surveys is required in order to receive your $15 stipend.** You will receive a separate email invitation to complete the 6-week assessment.

More soon,
The Healthy Bodies Team (link to http://healthybodiesstudy.org/research-team/)

If you have any questions or concerns about the study, please contact the researchers at HealthyBodiesTeam@umich.edu. Please note that this email address is not monitored 24/7 and is not monitored by mental health clinicians/counselors. Contact information for mental health services on your campus is included above. If you need help after normal business hours, call [campus after-hours/emergency counseling phone number].

Group B/D/F/H*:
***Only opt-ins from F1, F2, F3, H1, H2, H3**

Subject: Your Weekly Email from the Healthy Bodies Team (week 6)

Hi there, [name],

Thank you for your continued participation in the 12-week program designed to help [name of school] students take advantage of available services for eating and body image concerns. We are now in the sixth week of the program and are writing to provide important information that we hope you will consider.

Support is available

It is important to identify and support students who are considered clinically 'at-risk' for developing an eating disorder. Addressing any symptoms now, will reduce risk for both short- and long-term negative health consequences. With this in mind, we encourage students in need to utilize resources available at [name of school]. These resources have been compiled into a single document, which is available **HERE**. Information about [name(s) of local resource(s)] is also included below.

[list of campus/local resources]

As you know, this program involves 6- and 12-week follow-up assessments (brief online surveys). **Participation in these surveys is required in order to receive your $15 stipend.** You will receive a separate email invitation to complete the 6-week assessment.

More soon,
The Healthy Bodies Team (link to http://healthybodiesstudy.org/research-team/)

If you have any questions or concerns about the study, please contact the researchers at HealthyBodiesTeam@umich.edu. Please note that this email address is not monitored 24/7 and is not monitored by mental health clinicians/counselors. Contact information for mental health services on your campus is included above. If you need help after normal business hours, call [campus after-hours/emergency counseling phone number].

WEEK 7 INTERVENTION MESSAGES

Group A, Group E1 opt-ins, Group E2 opt-ins, and Group E3 opt-ins:

Subject: Halfway through Healthy Bodies

Hi [name],

We are now halfway through the 12-week program designed to help [name of school] students take advantage of available services for eating and body image concerns. During the second half of the program, you will continue to receive weekly emails containing information about local resources for eating and body image concerns and the importance of seeking help. You will also be invited to participate in a 12-week follow-up assessment. Participation in this and the previous assessments is required in order to receive your **$15 stipend.**

Did you know?

Eating disorders have the highest mortality rate of any mental health problem. As such, it is important to identify students who are considered clinically 'at-risk' for developing an eating disorder. Often times making students aware of the health risks associated with their current symptoms can motivate them to seek help. We want you to know that behaviors, such as restricting, excessive exercising, binging, and purging, can have short- and long-term consequences. Short-term consequences include fatigue/weakness, diminished sex drive, hair loss/thinning, dry hair and skin, and social withdrawal/isolation. Long-term consequences include infertility, heart problems, muscle/bone loss, and metabolic/digestive issues. Body image dissatisfaction and preoccupation with shape/weight often develop into disordered behaviors; even if they don't, these attitudes detract from the college experience.

Compared to your peer group…

Many college students who struggle with eating and body image concerns seem to think that these issues are 'normal'. This makes it easy to dismiss the need for help. Throughout this program you've seen your scores on two clinical assessments used to identify individuals at risk for an eating disorder—the SCOFF and the Weight Concerns Scale (WCS). For both the SCOFF and WCS, higher scores indicate higher levels of eating disorder symptoms. Using data collected from college students across the country, we explained that most of your peers fall well below the cut-off for an eating disorder. Many students who screen positively for an eating disorder are surprised to learn that they are struggling much more than other students. Sometimes realizing this can be the push needed to seek help.

Seek help today

We realize that college students are very busy and seeking help may fall low on the list of things to do (if it's there at all). Given the information above, we encourage students in need to take a few minutes right now to schedule an appointment at [name(s) of local resource(s)] or any of the other [name of school] resources outlined **HERE**.

[list of campus/local resources]

If you recently began receiving services, we hope this is proving helpful for you!

Warmly,
The Healthy Bodies Team (link to http://healthybodiesstudy.org/research-team/)

If you have any questions or concerns about the study, please contact the researchers at HealthyBodiesTeam@umich.edu. Please note that this email address is not monitored 24/7 and is not monitored by mental health clinicians/counselors. Contact information for mental health services on your campus is included above. If you need help after normal business hours, call [campus after-hours/emergency counseling phone number].

Group B, F1 opt-ins, Group F2 opt-ins, and Group F3 opt-ins:

Subject: Halfway through Healthy Bodies

Hi [name],

We are now halfway through the 12-week program designed to help [name of school] students take advantage of available services for eating and body image concerns. During the second half of the program, you will continue to receive weekly emails containing information about local resources for eating and body image concerns and the importance of seeking help. You will also be invited to participate in a 12-week follow-up assessment. Participation in this and the previous assessments is required in order to receive your **$15 stipend.**

Compared to your peer group…

Many college students who struggle with eating and body image concerns seem to think that these issues are 'normal'. This makes it easy to dismiss the need for help. Throughout this program you've seen your scores on two clinical assessments used to identify individuals at risk for an eating disorder—the SCOFF and the Weight Concerns Scale (WCS). For both the SCOFF and WCS, higher scores indicate higher levels of eating disorder symptoms. Using data collected from college students across the country, we explained that most of your peers fall well below the cut-off for an eating disorder. Many students who screen positively for an eating disorder are surprised to learn that they are struggling much more than other students. Sometimes realizing this can be the push needed to seek help.

Seek help today

Changing habits and attitudes can be difficult and treatment is commonly needed. We realize that college students are very busy and seeking help may fall low on the list of things to do (if it's there at all). That said, if you address any concerns now, rather than waiting, this could make a big difference for your health and well-being. With this in mind, we encourage students in need to take a few minutes right now to schedule an appointment at [name(s) of local resource(s)] or any of the other [name of school] resources outlined **HERE**.

[list of campus/local resources]

If you recently began receiving services, we hope this is proving helpful for you!

Warmly,
The Healthy Bodies Team (link to http://healthybodiesstudy.org/research-team/)

If you have any questions or concerns about the study, please contact the researchers at HealthyBodiesTeam@umich.edu. Please note that this email address is not monitored 24/7 and is not monitored by mental health clinicians/counselors. Contact information for mental health services on your campus is included above. If you need help after normal business hours, call [campus after-hours/emergency counseling phone number].

Group C, Group G1 opt-ins, Group G2 opt-ins, and Group G3 opt-ins:

Subject: Halfway through Healthy Bodies

Hi [name],

We are now halfway through the 12-week program designed to help [name of school] students take advantage of available services for eating and body image concerns. During the second half of the program, you will continue to receive weekly emails containing information about local resources for eating and body image concerns and the importance of seeking help. You will also be invited to participate in a 12-week follow-up assessment. Participation in this and the previous assessments is required in order to receive your **$15 stipend.**

Did you know?

Eating disorders have the highest mortality rate of any mental health problem. As such, it is important to identify students who are considered clinically 'at-risk' for developing an eating disorder. Often times making students aware of the health risks associated with their current symptoms can motivate them to seek help. We want you to know that behaviors, such as restricting, excessive exercising, binging, and purging, can have short- and long-term consequences. Short-term consequences include fatigue/weakness, diminished sex drive, hair loss/thinning, dry hair and skin, and social withdrawal/isolation. Long-term consequences include infertility, heart problems, muscle/bone loss, and metabolic/digestive issues. Body image dissatisfaction and preoccupation with shape/weight often develop into disordered behaviors; even if they don't, these attitudes detract from the college experience.

Seek help today

We realize that college students are very busy and seeking help may fall low on the list of things to do (if it's there at all). Given the information above, we encourage students in need to take a few minutes right now to schedule an appointment at [name(s) of local resource(s)] or any of the other [name of school] resources outlined **HERE**.

[list of campus/local resources]

If you recently began receiving services, we hope this is proving helpful for you!

Warmly,
The Healthy Bodies Team (link to http://healthybodiesstudy.org/research-team/)

If you have any questions or concerns about the study, please contact the researchers at HealthyBodiesTeam@umich.edu. Please note that this email address is not monitored 24/7 and is not monitored by mental health clinicians/counselors. Contact information for mental health services on your campus is included above. If you need help after normal business hours, call [campus after-hours/emergency counseling phone number].

Group D, Group H1 opt-ins, Group H2 opt-ins, and Group H3 opt-ins:

Subject: Halfway through Healthy Bodies

Hi [name],

We are now halfway through the 12-week program designed to help [name of school] students take advantage of available services for eating and body image concerns. During the second half of the program, you will continue to receive weekly emails containing information about local resources for eating and body image concerns and the importance of seeking help. You will also be invited to participate in a 12-week follow-up assessment. Participation in this and the previous assessments is required in order to receive your **$15 stipend.**

Seek help today

Changing habits and attitudes can be difficult and treatment is commonly needed. We realize that college students are very busy and seeking help may fall low on the list of things to do (if it's there at all). That said, if you address any concerns now, rather than waiting, this could make a big difference for your health and well-being. With this in mind, we encourage students in need to take a few minutes right now to schedule an appointment at [name(s) of local resource(s)] or any of the other [name of school] resources outlined **HERE**.

[list of campus/local resources]

If you recently began receiving services, we hope this is proving helpful for you!

Warmly,
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Group E non-opt-ins:

Subject: Halfway through Healthy Bodies

Hi [name],

We are now halfway through the program designed to help [name of school] students take advantage of available services for eating and body image concerns.

If you would like to continue to receive weekly emails over the next 6 weeks about local resources and services, PLEASE CLICK HERE [link to opt-in].

Regardless of your preference, you will still be invited to participate in the 12-week follow-up assessment. Participation in this and the previous assessments is required in order to receive your **$15 stipend.**

Did you know?

Eating disorders have the highest mortality rate of any mental health problem. As such, it is important to identify students who are considered clinically 'at-risk' for developing an eating disorder. Often times making students aware of the health risks associated with their current symptoms can motivate them to seek help. We want you to know that behaviors, such as restricting, excessive exercising, binging, and purging, can have short- and long-term consequences. Short-term consequences include fatigue/weakness, diminished sex drive, hair loss/thinning, dry hair and skin, and social withdrawal/isolation. Long-term consequences include infertility, heart problems, muscle/bone loss, and metabolic/digestive issues. Body image dissatisfaction and preoccupation with shape/weight often develop into disordered behaviors; even if they don't, these attitudes detract from the college experience.

Compared to your peer group…

Many college students who struggle with eating and body image concerns seem to think that these issues are 'normal'. This makes it easy to dismiss the need for help. Throughout this program you've seen your scores on two clinical assessments used to identify individuals at risk for an eating disorder—the SCOFF and the Weight Concerns Scale (WCS). For both the SCOFF and WCS, higher scores indicate higher levels of eating disorder symptoms. Using data collected from college students across the country, we explained that most of your peers fall well below the cut-off for an eating disorder. Many students who screen positively for an eating disorder are surprised to learn that they are struggling much more than other students. Sometimes realizing this can be the push needed to seek help.

Seek help today

We realize that college students are very busy and seeking help may fall low on the list of things to do (if it's there at all). Given the information above, we encourage students in need to take a few minutes right now to schedule an appointment at [name(s) of local resource(s)] or any of the other [name of school] resources outlined **HERE**.

[list of campus/local resources]

If you recently began receiving services, we hope this is proving helpful for you!

Warmly,
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Group F non-opt-ins:

Subject: Halfway through Healthy Bodies

Hi [name],

We are now halfway through the program designed to help [name of school] students take advantage of available services for eating and body image concerns.

If you would like to continue to receive weekly emails over the next 6 weeks about local resources and services, PLEASE CLICK HERE [link to opt-in].

Regardless of your preference, you will still be invited to participate in the 12-week follow-up assessment. Participation in this and the previous assessments is required in order to receive your **$15 stipend.**

Compared to your peer group…

Many college students who struggle with eating and body image concerns seem to think that these issues are 'normal'. This makes it easy to dismiss the need for help. Throughout this program you've seen your scores on two clinical assessments used to identify individuals at risk for an eating disorder—the SCOFF and the Weight Concerns Scale (WCS). For both the SCOFF and WCS, higher scores indicate higher levels of eating disorder symptoms. Using data collected from college students across the country, we explained that most of your peers fall well below the cut-off for an eating disorder. Many students who screen positively for an eating disorder are surprised to learn that they are struggling much more than other students. Sometimes realizing this can be the push needed to seek help.

Seek help today

Changing habits and attitudes can be difficult and treatment is commonly needed. We realize that college students are very busy and seeking help may fall low on the list of things to do (if it's there at all). That said, if you address any concerns now, rather than waiting, this could make a big difference for your health and well-being. With this in mind, we encourage students in need to take a few minutes right now to schedule an appointment at [name(s) of local resource(s)] or any of the other [name of school] resources outlined **HERE**.

[list of campus/local resources]

If you recently began receiving services, we hope this is proving helpful for you!

Warmly,
The Healthy Bodies Team (link to http://healthybodiesstudy.org/research-team/)

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Group G non-opt-ins:

Subject: Halfway through Healthy Bodies

Hi [name],

We are now halfway through the program designed to help [name of school] students take advantage of available services for eating and body image concerns.

If you would like to continue to receive weekly emails over the next 6 weeks about local resources and services, PLEASE CLICK HERE [link to opt-in].

Regardless of your preference, you will still be invited to participate in the 12-week follow-up assessment. Participation in this and the previous assessments is required in order to receive your **$15 stipend.**

Did you know?

Eating disorders have the highest mortality rate of any mental health problem. As such, it is important to identify students who are considered clinically 'at-risk' for developing an eating disorder. Often times making students aware of the health risks associated with their current symptoms can motivate them to seek help. We want you to know that behaviors, such as restricting, excessive exercising, binging, and purging, can have short- and long-term consequences. Short-term consequences include fatigue/weakness, diminished sex drive, hair loss/thinning, dry hair and skin, and social withdrawal/isolation. Long-term consequences include infertility, heart problems, muscle/bone loss, and metabolic/digestive issues. Body image dissatisfaction and preoccupation with shape/weight often develop into disordered behaviors; even if they don't, these attitudes detract from the college experience.

Seek help today

We realize that college students are very busy and seeking help may fall low on the list of things to do (if it's there at all). Given the information above, we encourage students in need to take a few minutes right now to schedule an appointment at [name(s) of local resource(s)] or any of the other [name of school] resources outlined **HERE**.

[list of campus/local resources]

If you recently began receiving services, we hope this is proving helpful for you!

Warmly,
The Healthy Bodies Team (link to http://healthybodiesstudy.org/research-team/)

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Group H non-opt-ins:

Subject: Halfway through Healthy Bodies

Hi [name],

We are now halfway through the program designed to help [name of school] students take advantage of available services for eating and body image concerns.

If you would like to continue to receive weekly emails over the next 6 weeks about local resources and services, PLEASE CLICK HERE [link to opt-in].

Regardless of your preference, you will still be invited to participate in the 12-week follow-up assessment. Participation in this and the previous assessments is required in order to receive your **$15 stipend.**

Seek help today

Changing habits and attitudes can be difficult and treatment is commonly needed. We realize that college students are very busy and seeking help may fall low on the list of things to do (if it's there at all). That said, if you address any concerns now, rather than waiting, this could make a big difference for your health and well-being. With this in mind, we encourage students in need to take a few minutes right now to schedule an appointment at [name(s) of local resource(s)] or any of the other [name of school] resources outlined **HERE**.

[list of campus/local resources]

If you recently began receiving services, we hope this is proving helpful for you!

Warmly,
The Healthy Bodies Team (link to http://healthybodiesstudy.org/research-team/)

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WEEK 8 INTERVENTION MESSAGES

Group A/C/E/G*:
***Only opt-ins from E1, E2, E3, G1, G2, G3**

Subject: Resources and Information from the Healthy Bodies Team

[name],

Thank you for your continued participation in the 12-week program designed to help [name of school] students take advantage of available services for eating and body image concerns. We are now in the eighth week of the program and are writing to provide important information that we hope you will consider.

Why should you care?

It is important to identify and support students who are considered to be clinically 'at risk' for developing an eating disorder. Without help, symptoms typically persist or intensify. What's more, not addressing current symptoms makes one more vulnerable to other problems. Depression and anxiety often co-occur among students considered to be at risk. Substance abuse is also four times more common in individuals with eating disorders than in the general population. In other words, not seeking help now creates increased risk for significantly greater problems in the future.

Available resources

Given the information above, we hope you realize how important it is to seek help. We urge students in need to take advantage of available services as soon as possible.

[list of campus/local resources]

What resources are available to me at [name of school]?
Because it can be difficult to know where to even begin looking for support, the Healthy Bodies Team created a customized document for [name of school] students containing information about resources for eating and body image concerns. Check it out **HERE**!

About [local resource #1]

[PICTURE OF COUNSELING CENTER WITH NAME]

[Detailed information about the counseling center (available resources and ways of utilizing these resources)]

If you have recently begun receiving services, we hope this has been helpful and continues to be.

Take care,
The Healthy Bodies Team (link to http://healthybodiesstudy.org/research-team/)

If you have any questions or concerns about the study, please contact the researchers at HealthyBodiesTeam@umich.edu. Please note that this email address is not monitored 24/7 and is not monitored by mental health clinicians/counselors. Contact information for mental health services on your campus is included above. If you need help after normal business hours, call [campus after-hours/emergency counseling phone number].

Group B/D/F/H*:
***Only opt-ins from F1, F2, F3, H1, H2, H3**

Subject: Resources and Information from the Healthy Bodies Team

[name],

Thank you for your continued participation in the 12-week program designed to help [name of school] students take advantage of available services for eating and body image concerns. We are now in the eighth week of the program and are writing to provide important information that we hope you will consider.

Available resources

It is important to identify and support students who are considered to be clinically 'at risk' for developing an eating disorder. Symptoms—such as negative thoughts about food and weight and unhealthy eating habits (such as restricting, binging, and purging)—are considered serious issues that could benefit from professional help. The good news: People struggling with these difficulties have been able to find helpful ways to overcome them. We urge students in need to take advantage of available services as soon as possible.

[list of campus/local resources]

What resources are available to me at [name of school]?
Because it can be difficult to know where to even begin looking for support, the Healthy Bodies Team created a customized document for [name of school] students containing information about resources for eating and body image concerns. Check it out **HERE**!

About [local resource #1]

[PICTURE OF COUNSELING CENTER WITH NAME]

[Detailed information about the counseling center (available resources and ways of utilizing these resources)]

If you have recently begun receiving services, we hope this has been helpful and continues to be.

Take care,
The Healthy Bodies Team (link to http://healthybodiesstudy.org/research-team/)

If you have any questions or concerns about the study, please contact the researchers at HealthyBodiesTeam@umich.edu. Please note that this email address is not monitored 24/7 and is not monitored by mental health clinicians/counselors. Contact information for mental health services on your campus is included above. If you need help after normal business hours, call [campus after-hours/emergency counseling phone number].

WEEK 9 INTERVENTION MESSAGES

Group A/C/E/G*:
***Only opt-ins from E1, E2, E3, G1, G2, G3**

Subject: Your Weekly Email from the Healthy Bodies Team

Hello [name],

Thank you for your continued participation in the 12-week program designed to help [name of school] students take advantage of available services for eating and body image concerns. We are now in the ninth week of the program and are writing to provide important information that we hope you will consider.

What are the physical consequences?

In addition to emotional consequences, medical complications from eating disorders can create serious physical disabilities. These include damage to every organ system in the body, osteoporosis, cognitive losses, gastrointestinal bleeding, dehydration, electrolyte abnormality, and cardiac arrest. In fact, eating disorders have the highest mortality rate of any mental health problem. With this in mind, it is important to identify and support students who are considered to be clinically 'at risk' for developing an eating disorder. Without help, symptoms tend to persist or intensify. Even the risks associated with 'subclinical' symptoms can have long-term consequences and require intervention.

Take the next step to seek help

Given the information above, we urge students in need to take advantage of available services as soon as possible. These include:

[list of campus/local resources]

What are my options?
We understand that seeking help is easier said than done. It can be difficult to know where to even begin looking for support. The Healthy Bodies Team has worked to simplify this process. We have created a customized document for [name of school] students containing information about resources for eating and body image concerns. For a copy of this document, which you can save or print, please click **HERE**!

About [local resource #2]

[PICTURE OF LOCAL RESOURCE #2 WITH NAME]

[Detailed information about local resource #2 (typically the campus health service) (available resources and ways of utilizing these resources)]

If you are now receiving help, we hope this has been and will continue to be a positive experience for you.

Wishing you the best,
The Healthy Bodies Team (link to http://healthybodiesstudy.org/research-team/)

If you have any questions or concerns about the study, please contact the researchers at HealthyBodiesTeam@umich.edu. Please note that this email address is not monitored 24/7 and is not monitored by mental health clinicians/counselors. Contact information for mental health services on your campus is included above. If you need help after normal business hours, call [campus after-hours/emergency counseling phone number].

Group B/D/F/H*:
***Only opt-ins from F1, F2, F3, H1, H2, H3**

Subject: Your Weekly Email from the Healthy Bodies Team

Hello [name],

Thank you for your continued participation in the 12-week program designed to help [name of school] students take advantage of available services for eating and body image concerns. We are now in the ninth week of the program and are writing to provide important information that we hope you will consider.

Take the next step to seek help

The earlier treatment is received, the greater the likelihood of full physical and emotional health and recovery. With this in mind, we urge students in need to take advantage of available services as soon as possible. These include:

[list of campus/local resources]

What are my options?
We understand that seeking help is easier said than done. It can be difficult to know where to even begin looking for support. The Healthy Bodies Team has worked to simplify this process. We have created a customized document for [name of school] students containing information about resources for eating and body image concerns. For a copy of this document, which you can save or print, please click **HERE**!

About [local resource #2]

[PICTURE OF LOCAL RESOURCE #2 WITH NAME]

[Detailed information about local resource #2 (typically the campus health service) (available resources and ways of utilizing these resources)]

If you are now receiving help, we hope this has been and will continue to be a positive experience for you.

Wishing you the best,
The Healthy Bodies Team (link to http://healthybodiesstudy.org/research-team/)

If you have any questions or concerns about the study, please contact the researchers at HealthyBodiesTeam@umich.edu. Please note that this email address is not monitored 24/7 and is not monitored by mental health clinicians/counselors. Contact information for mental health services on your campus is included above. If you need help after normal business hours, call [campus after-hours/emergency counseling phone number].

WEEK 10 INTERVENTION MESSAGES

Group A/C/E/G*:
***Only opt-ins from E1, E2, E3, G1, G2, G3**

Subject: Help for Eating and Body Image Concerns at [name of school]

Hey [name],

Thank you for your continued participation in the 12-week program designed to help [name of school] students take advantage of available services for eating and body image concerns. We are now in the tenth week of the program and are writing to provide important information that we hope you will consider.

Why is it important to address eating and body image concerns?

Getting everything you want from your college experience—both in and out of the classroom—requires physical and emotional energy. **Disordered eating and preoccupation with shape and weight leave the body and mind depleted. Fatigue and weakness are common among college students who are considered to be clinically 'at risk' for developing an eating disorder. Left untreated, fatigue and weakness often become more severe as the body is forced to slow down all of its processes to conserve energy. This can result in serious medical consequences.**

Help is here

There are multiple campus resources, which are described in detail **HERE**. Basic information about [name(s) of local resource(s)] is also listed below.

[list of campus/local resources]

If you have recently started counseling or therapy, we hope this has been beneficial and continues to be!

Be well,
The Healthy Bodies Team (link to http://healthybodiesstudy.org/research-team/)

If you have any questions or concerns about the study, please contact the researchers at HealthyBodiesTeam@umich.edu. Please note that this email address is not monitored 24/7 and is not monitored by mental health clinicians/counselors. Contact information for mental health services on your campus is included above. If you need help after normal business hours, call [campus after-hours/emergency counseling phone number].

Group B/D/F/H*:
***Only opt-ins from F1, F2, F3, H1, H2, H3**

Subject: Help for Eating and Body Image Concerns at [name of school]

Hey [name],

Thank you for your continued participation in the 12-week program designed to help [name of school] students take advantage of available services for eating and body image concerns. We are now in the tenth week of the program and are writing to provide important information that we hope you will consider.

Help is here

Getting everything you want from your college experience—both in and out of the classroom—requires physical and emotional energy. Healthy eating habits and positive body image leave the mind and body energized. Creating and maintaining a healthy and positive attitude related to eating and body image can be difficult and treatment is commonly needed. The sooner you address any concerns, the sooner you can fully embrace all that your college experience has to offer. There are multiple campus resources, which are described in detail **HERE**. Basic information about [name(s) of local resource(s)] is also listed below.

[list of campus/local resources]

If you have recently started counseling or therapy, we hope this has been beneficial and continues to be!

Be well,
The Healthy Bodies Team (link to http://healthybodiesstudy.org/research-team/)

If you have any questions or concerns about the study, please contact the researchers at HealthyBodiesTeam@umich.edu. Please note that this email address is not monitored 24/7 and is not monitored by mental health clinicians/counselors. Contact information for mental health services on your campus is included above. If you need help after normal business hours, call [campus after-hours/emergency counseling phone number].

WEEK 11 INTERVENTION MESSAGES

Group A/C/E/G*:
***Only opt-ins from E1, E2, E3, G1, G2, G3**

Subject: Support for [name of school] students from the Healthy Bodies Team

Dear [name],

Thank you for your continued participation in the 12-week program designed to help [name of school] students take advantage of available services for eating and body image concerns. We are now in the eleventh week of the program and are writing to provide important information that we hope you will consider.

What's at stake?

It is important to identify and support students who are considered to be clinically 'at risk' for developing an eating disorder. Disordered behaviors—including restricting, binging, and purging—and negative attitudes—including preoccupation with food and weight—are complex issues and can have serious consequences for health, productivity, and relationships. Struggling with eating and body image concerns leads to self-critical thoughts and unhealthy habits that disrupt normal body functions and affect daily activities in obvious and subtle ways. Over time, individuals who do not address these concerns experience feelings of mental dullness, difficulty concentrating, difficulty regulating emotions, and are at increased risk for mood disorders.

The time is now to seek help!

Given the information above, we hope you realize how important it is to seek help. Please consider [name(s) of local resource(s)] or any of the other local resources outlined **HERE**.

[list of campus/local resources]

If you recently began receiving services, we hope this is proving helpful for you!

Kind regards,
The Healthy Bodies Team (link to http://healthybodiesstudy.org/research-team/)

If you have any questions or concerns about the study, please contact the researchers at HealthyBodiesTeam@umich.edu. Please note that this email address is not monitored 24/7 and is not monitored by mental health clinicians/counselors. Contact information for mental health services on your campus is included above. If you need help after normal business hours, call [campus after-hours/emergency counseling phone number].

Group B/D/F/H*:
***Only opt-ins from F1, F2, F3, H1, H2, H3**

Subject: Support for [name of school] students from the Healthy Bodies Team

Dear [name],

Thank you for your continued participation in the 12-week program designed to help [name of school] students take advantage of available services for eating and body image concerns. We are now in the eleventh week of the program and are writing to provide important information that we hope you will consider.

The time is now to seek help!

It is important to identify and support students who are considered to be clinically 'at risk' for developing an eating disorder. Symptoms—such as negative thoughts about food and weight and unhealthy eating habits (such as restricting, binging, and purging)—are considered serious issues that could benefit from professional help. Fortunately, students struggling with these difficulties have benefited from resources that you have access to as a [name of school] student. Please consider [name(s) of local resource(s)] or any of the other local resources outlined **HERE**.

[list of campus/local resources]

If you recently began receiving services, we hope this is proving helpful for you!

Kind regards,
The Healthy Bodies Team (link to http://healthybodiesstudy.org/research-team/)

If you have any questions or concerns about the study, please contact the researchers at HealthyBodiesTeam@umich.edu. Please note that this email address is not monitored 24/7 and is not monitored by mental health clinicians/counselors. Contact information for mental health services on your campus is included above. If you need help after normal business hours, call [campus after-hours/emergency counseling phone number].

WEEK 12 INTERVENTION MESSAGES

Group A/C/E/G*:
***Only opt-ins from E1, E2, E3, G1, G2, G3**

Subject: Final Week of Healthy Bodies

Hi there, [name],

Thank you for your continued participation in the 12-week program designed to help [name of school] students take advantage of available services for eating and body image concerns. We are now in the final week of the program and are writing to provide important information that we hope you will consider.

How do eating and body image concerns affect academic performance?

While you may know about the negative *health* consequences associated with disordered eating, you may be unaware of how these behaviors and attitudes could impact *academic performance*. **Research has shown that preoccupation with weight and food limit the time and concentration needed to be a successful student. Disordered behaviors may also impair productivity while studying to the extent that they cause cognitive deficits, such as poor attention and working memory. Researchers have found that untreated symptoms of disordered eating are associated with worse academic outcomes among undergraduates, including significantly lower GPAs.**

Support is available

Given the information above, we hope you realize how important it is to seek help. The Healthy Bodies Team has created a customized document for [name of school] students containing resources for eating and body image concerns. For a copy of this document, which you can save or print, click **HERE**! Contact information for [name(s) of local resource(s)] is also included below.

[list of campus/local resources]

As you know, this program involves a 12-week follow-up assessment (brief online survey). Participation in this and the previous assessments is required in order to receive your **$15 stipend**. You will receive a separate email invitation to complete the final assessment.

More soon,
The Healthy Bodies Team (link to http://healthybodiesstudy.org/research-team/)

If you have any questions or concerns about the study, please contact the researchers at HealthyBodiesTeam@umich.edu. Please note that this email address is not monitored 24/7 and is not monitored by mental health clinicians/counselors. Contact information for mental health services on your campus is included above. If you need help after normal business hours, call [campus after-hours/emergency counseling phone number].

Group B/D/F/H*:
***Only opt-ins from F1, F2, F3, H1, H2, H3**

Subject: Final Week of Healthy Bodies

Hi there, [name],

Thank you for your continued participation in the 12-week program designed to help [name of school] students take advantage of available services for eating and body image concerns. We are now in the final week of the program and are writing to provide important information that we hope you will consider.

How do eating and body image concerns affect academic performance?

While you may recognize that addressing any eating and body image concerns could improve physical and emotional health, you may be unaware of how this could actually improve academic performance. Spending less time worrying about weight and food means more time and concentration for academics (and all of the opportunities available to you). Healthy eating habits may also increase productivity while studying and overall cognitive functioning.

Support is available

With this in mind, we hope you realize how important it is to seek help. The Healthy Bodies Team has created a customized document for [name of school] students containing resources for eating and body image concerns. For a copy of this document, which you can save or print, click **HERE**! Contact information for [name(s) of local resource(s)] is also included below.

[list of campus/local resources]

As you know, this program involves a 12-week follow-up assessment (brief online survey). Participation in this and the previous assessments is required in order to receive your **$15 stipend.** You will receive a separate email invitation to complete the final assessment.

More soon,
The Healthy Bodies Team (link to http://healthybodiesstudy.org/research-team/)

If you have any questions or concerns about the study, please contact the researchers at HealthyBodiesTeam@umich.edu. Please note that this email address is not monitored 24/7 and is not monitored by mental health clinicians/counselors. Contact information for mental health services on your campus is included above. If you need help after normal business hours, call [campus after-hours/emergency counseling phone number].

Notes: Messages in Study #1 (as shown above) were organized into seven overall segments: (1) personalized greeting; (2) introductory sentence; (3) the benefits of eating disorder treatment (for students in gain conditions) or the negative consequences of untreated eating disorders (for students in loss conditions); (4) gender-specific relative risk information (for students in comparison on conditions); (5) brief reiteration of the importance of seeking help followed by a customized list of local resources and a link to the resource PDF; (6) valediction; and (7) disclaimer and emergency contact information. In Study #2, intervention messages were organized the same way as in Study #1, though the benefits of treatment were not communicated (given that there was no gain condition).

Table A3. Definitions and Operationalizations of Outcomes, Chapter 4

Outcome	Survey Item	Operationalization
Tx, past 6 wk	Over the past 6 weeks, have you received counseling or therapy from a health professional (such as a psychiatrist, psychologist, therapist, social worker, nutritionist, or primary care doctor) for concerns related to your habits and attitudes about eating, exercising, and/or body shape/weight?	1=Yes 0=No
Perceived need	Over the past 6 weeks, I think I needed help such as counseling or therapy for concerns related to my habits and attitudes about eating, exercising, and/or body shape/weight.	1=Strongly agree/Agree 0=Neither agree nor disagree/Disagree/Strongly disagree
Considered[1]	Over the past 6 weeks, have you ever considered seeking help from a health professional for concerns related to your habits and attitudes about eating, exercising, and/or body shape/weight?	1=Yes 0=No
Plan to seek[1]	I plan to seek counseling or therapy for concerns related to my habits and attitudes about eating, exercising, and/or body shape/weight.	1=Strongly agree/Agree 0=Neither agree nor disagree/Disagree/Strongly disagree/I do not have concerns

Notes: "tx" is any eating disorder therapy/counseling from a mental health professional. "wk"=weeks. [1]The following survey items were only asked of students who had not sought treatment in the past six weeks: "considered", and "plan to seek". For these variables, students who had sought treatment in the past six weeks are coded as 1, along with students who had not sought treatment in the past six weeks and answered "strongly agree" or "agree" to "plan to seek" and students who had not sought treatment in the past six weeks and answered "yes" to "considered".

Table A4. Baseline Percentages by Sample Attrition, Chapter 4

	STUDY #1					STUDY #2			
	Initial Recruitment Sample	B Responders	Sample Meeting Intervention Criteria	6 Responders (sample meeting intervention criteria)	12 Responders (sample meeting intervention criteria)	Initial Recruitment Sample	B Responders	Sample Meeting Intervention Criteria	12 Responders (sample meeting intervention criteria)
N	20,289	4,697	1,149	630	616	8,000	1,930	427	268
Demographics									
Age (18-20)	60.26	63.53***	65.27	66.51	66.54	49.47	57.91***	55.97	54.10
Female	52.29	69.36***	75.20***	82.86***	85.32	50.44	65.16***	73.77***	72.76
White	70.91	75.26***	74.85	74.92	75.09	64.39	68.29**	69.16	71.64
Black	4.27	3.13***	3.31	3.65	3.90	4.12	3.68	3.97	4.10
Latino/a	3.85	3.60	4.26	4.29	3.72	4.86	5.03	5.14	4.48
Asian	10.15	7.71***	6.53	7.30	7.06	15.83	11.81***	11.92	11.19
Other race/ethnicity	10.81	10.30	11.05	9.84	10.22	10.54	10.88	9.58	8.58
Pell Grant recipient	26.76	24.97†	25.36	24.31	25.00				
U.S. citizen	92.70	93.76*	94.34	95.24	95.54	92.83	95.59***	96.02	95.90
Heterosexual		87.32	87.54	86.83	86.80				
Campus and Academics									
On-campus housing		53.49	54.74	55.87	56.51				
GPA (≥3.5)	37.18	45.24***	41.71*	43.82	44.17	28.71	29.57	27.63	28.36
Campus "A"	49.29	42.88***	39.25*	48.41***	49.44	100.00	100.00	100.00	100.00
Campus "B"	29.57	28.87	29.24	23.65*	24.16	0.00	0.00	0.00	0.00
Campus "C"	11.76	16.10***	18.71*	17.78	17.10	0.00	0.00	0.00	0.00
Campus "D"	9.37	12.16***	12.79	10.16	9.29	0.00	0.00	0.00	0.00
Intervention Condition									
Default (opt-out)		50.42	46.82*	48.41	46.84				
Comparison (on)		50.03	50.13	49.68	48.33				
Sign (loss)		51.03	48.74	50.48	49.81				
Intervention							51.40	50.59	45.52

Notes: ***p<0.001, **p<0.01, *p<0.05, †p<0.10. "B"=baseline, "6"=six-week follow-up, "12"=12-week follow-up .In Study #1, the following variables were not available for the initial recruitment sample: "heterosexual" and "on-campus housing". Significant differences are reported across a single layer of attrition (from one column to the next on the right). Pell Grant recipient data are missing for students at campus "A". "Other race/ethnicity" includes students characterized in institutional data provided by campus Registrars' as "Native American/Alaskan Native", "other/multi" race/ethnicity, and "unknown" race/ethnicity. In Study #2, the baseline survey did not measure housing or sexuality.

Table A5. Baseline Intervention Sample Demographics across Conditions (%), Chapter 4

	STUDY #1									STUDY #2		
	Opt-out	**Opt-in**	***p***	**Comparison on**	**Comparison off**	***p***	**Loss**	**Gain**	***p***	**Intervention**	**Control**	***p***
Age (18-20)	67.70	67.58	ns	65.19	69.88	ns	71.57	63.92	*	61.48	47.95	*
Female	81.23	84.78	ns	82.94	83.23	ns	82.94	83.23	ns	70.25	72.60	ns
White	73.38	75.78	ns	74.40	74.84	ns	73.58	75.63	ns	72.95	70.55	ns
Black	3.07	3.73	ns	3.07	3.73	ns	2.68	4.11	ns	3.28	4.79	ns
Latino/a	3.75	4.35	ns	5.80	2.48	*	4.35	3.80	ns	5.74	3.42	ns
Asian	8.19	5.90	ns	6.14	7.76	ns	8.03	6.01	ns	10.66	11.64	ns
Other race/ethnicity	11.60	10.25	ns	10.58	11.18	ns	11.37	10.44	ns	7.38	9.59	ns
Pell Grant recipient	26.14	26.35	ns	31.25	21.25	*	22.64	29.81	ns			
U.S. citizen	95.56	94.41	ns	95.56	94.41	ns	93.65	96.20	ns	95.90	95.89	ns
Heterosexual	90.44	84.16	*	86.69	87.58	ns	86.62	87.66	ns			

Notes: ***p<0.001, **p<0.01, *p<0.05, †p<0.10, "ns"="non-significant". Table values are percentages of weighted sample. Statistical significance is for chi-square tests of differences across levels of the same condition (in Study #1, opt-in versus opt-out, comparison on versus off, loss versus gain; in Study #2, intervention versus control). Pell Grant recipient data are missing for students at campus "A". "Other race/ethnicity" includes students characterized in institutional data provided by campus Registrars' as "Native American/Alaskan Native", "other/multi" race/ethnicity, and "unknown" race/ethnicity. In Study #2, the baseline survey did not measure sexuality.

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