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Assessing perceptions of a mindfulness-based cognitive therapy (MBCT) program within a university population

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An abstract of
A thesis submitted to the Faculty of the
Rollins School of Public Health of Emory University
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Abstract

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By Shannon Joy Lorraine Gatewood

Objective: To determine the nature of the associations between socio-demographic variables, depression, perceptions of, and behavioral intention to use a mindfulness-based cognitive therapy (MBCT) program, Project UPLIFT, among college students. **Participants:** A convenience sample of undergraduate and graduate students enrolled at Emory University during the Spring 2011 semester. **Methods:** Data were collected via web-based survey. The following analyses were conducted on students' socio-demographic characteristics, depressive symptoms, perceptions of Project UPLIFT, and behavioral intention to use the program: frequencies, descriptive statistics, full multivariable linear regression, Pearson's (*r*) correlation, independent-samples t-test, and one- and two-way ANOVA. **Results:** Several socio-demographic characteristics significantly predicted depression and perceptions of Project UPLIFT. When other variables were not controlled, depression was not significantly associated with perceptions of the program. Students' depression and perceptions of Project UPLIFT significantly influenced the likelihood that students would use the program if it were available. Specifically, students who are more depressed and have more favorable perceptions of Project UPLIFT are significantly more likely to use the program. **Conclusions:** Students' experience of depression and perceptions they have toward mental health treatment influence their likelihood of utilizing services. Colleges should become more cognizant of students' perceptions of treatment in light of their mental health needs, whether these needs are perceived by students as such, and other factors that influence help-seeking behaviors on campus.

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I. Introduction

a. Background & Significance

Defined by the World Health Organization as a state of well-being in which every individual realizes his or her own potential, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to her or his community,[1] mental health has quickly become a pressing public health concern. In 2001, WHO estimated that "one in four families has at least one member suffering from a mental or behavioral disorder,"[2(p20)] and that 25% of all people will be affected by some type of mental or behavioral health issue at some point in their lives. Given the size of the world's population, the number of individuals who will be affected is, indeed, staggering, and the far-reaching impact that mental disorders have is that much more severe. Communities are impacted by the costs, lost productivity, and even legal issues that accompany affliction with mental health disorders. Mental health problems also affect family members of those experiencing symptoms, placing a significant burden on families, which can be characterized by factors such as economic difficulty, stress, a breakdown of the normal routine and social isolation. Individuals who experience symptoms of a mental illness must cope with a reduced or complete lack of ability to participate in normal activities such as work and recreation;[2] in the case of college students, impaired functioning can have substantial negative consequences.[3-5]

Typically thought of as a time of great academic, social, and intellectual growth and development, the college years are also characterized by a great deal of transition and stress, which can result in the onset or recurrence of psychiatric disorders. A study based on the National Epidemiologic Study on Alcohol and Related Conditions found that nearly half of a sample of college students met criteria for at least one psychiatric disorder, as well as a high

prevalence of alcohol use, and personality, mood, and anxiety disorders.[6] Though mental health varies across some factors (e.g., gender, socioeconomic status, level of study), it is clear that mental health problems have been increasing in prevalence among this population.[7]

Depression, in particular, is a significant problem in the college population. Recent data[8] demonstrated that approximately 16% of undergraduates and 13% of graduate students met criteria for any depressive or anxiety disorder. Others[7] have shown that as many as 17% of students screened positive for depression according to the Patient Health Questionnaire-9 (PHQ-9) – this includes 9% of students who screened positive for major depression. Unfortunately, a large percentage of college-aged individuals who suffer from some behavioral or mental health disorder either never seek treatment or do not adhere to prescribed treatment regimens if they do seek help.[6, 9-11] A variety of barriers to service utilization have been identified, including attitudes and knowledge about services.[10] Mental disorders often negatively impact educational, social, and economic outcomes. Given this, the increase in prevalence of mental health problems, and that fewer than half of students who suffer from mental ill-health seek out treatment, it is pressing to develop alternative interventions geared toward the prevention, detection, and treatment of these conditions.[11]

In spite of the tremendous need to develop and implement innovative mental health programs on university campuses, little work has been done to examine the perceptions of students regarding specific mental health services. Project UPLIFT is a new, mindfulness-based cognitive therapy (MBCT) intervention that exists in two forms: a treatment and a prevention curriculum. The goal of the program – depending upon whether the treatment or prevention curriculum is used – is either to reduce or avoid the experience of depressive symptoms.[12] The current study sought to apply constructs from two distinct theoretical

models to the assessment of perceptions about a mindfulness-based cognitive therapy program, like Project UPLIFT, for treatment and prevention of depression.

b. Theoretical Framework

The Diffusion of Innovations model (DOI; Figure 1) posits that the process by which an innovation – an "idea, practice, or object that is perceived as new by an individual" – is adopted is impacted by many variables, including the socio-economic characteristics of the individual, or "the decision-making unit," and the perceived characteristics of the innovation.[13, 14(p990)] DOI offers two constructs specific to the perceived characteristics of an innovation: relative advantage ("the degree to which an innovation is perceived as better than the idea it supersedes") and complexity ("the degree to which an innovation is perceived as difficult to understand and use").[14(p990)] According to Rogers,[13, 14] innovations that are perceived as having greater relative advantage and less complexity will be adopted more rapidly than other innovations.

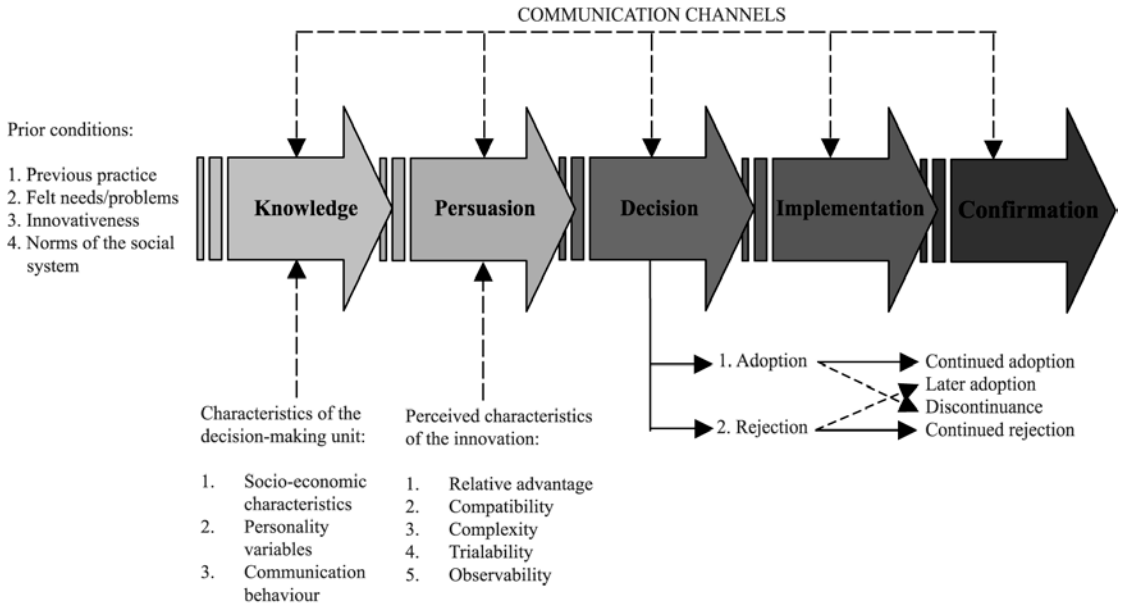

Figure 1. Diffusion of Innovations (DOI) Model[13]

Derived from the Theory of Reasoned Action (TRA), **t**he Technology Acceptance Model (TAM) was developed to predict acceptance and use of new technologies.[15, 16] TRA posits that an individual's performance of a specified behavior is determined by his or her behavioral intention (BI) to perform that behavior, that BI is influenced, in part, by the individual's attitude regarding that behavior, and that the individual's attitudes will be determined by their beliefs about and evaluation of that behavior's consequences. TRA also asserts that any other determinants of an individual's behavior will exercise their influence indirectly; these "external variables" include characteristics of the individual, such as personality and cognitive style.[17, 18] Using TRA as a foundation, Davis identified several key variables that could be used to model the relationship between external factors and an individual's beliefs, attitudes, and intentions;[15] perceived usefulness - " the degree to which a person believes that using a particular system would enhance his or her job performance" - and perceived ease of use - "the degree to which a person believes that using a particular system would be free of effort" - constitute the core constructs of TAM (Figure 2).[16(p320)]

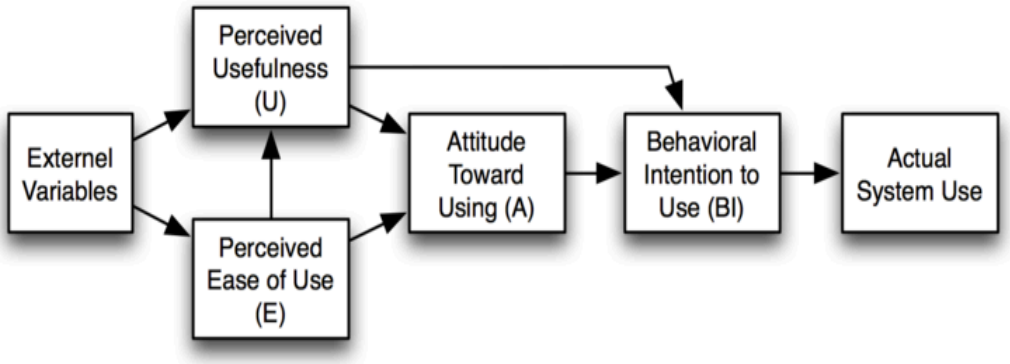

Figure 2. Technology Acceptance Model (TAM)[15]

According to Davis,[16] complexity closely parallels perceived ease of use, and any technology that is perceived to be useful as well as easier to use than other technologies is more likely to

be adopted. Perceived usefulness (PU), perceived ease of use (PEOU), and behavioral intention (BI) – all from the Technology Acceptance Model (TAM) – and relative advantage, which is taken from the Diffusion of Innovations (DOI) model, are distinct theoretical concepts which measure an individual's attitudes toward new innovations.[13-16]

Utilizing the aforementioned constructs as a framework, the current study sought to elucidate the sentiments of college students regarding a mindfulness-based cognitive behavioral therapy (MBCT) intervention for depression, Project UPLIFT.[12] The specific aims of the study were:

- **Aim 1:** Determine overall prevalence and severity of depressive symptoms among college students
- **Aim 2:** Determine whether socio-demographic factors are significantly associated with differences in severity of depressive symptoms among college students
- **Aim 3:** Determine whether socio-demographic factors and depressive symptoms are significantly associated with perceptions about Project UPLIFT
- **Aim 4:** Determine whether depressive symptoms alone are associated with students' perceptions about and likelihood of using Project UPLIFT
- **Aim 5:** Determine whether students' perceptions alone are associated with their likelihood of using Project UPLIFT
- **Aim 6:** Determine whether students' perceptions about Project UPLIFT are associated with their likelihood of using such a program if they experience depression

In line with the specific aims of the study, the primary hypotheses were:

- **Hypothesis 1:** Significant differences in severity of depressive symptoms will be found across socio-demographic variables. Specifically, students who are female, non-white,

and of lower socioeconomic status will have significantly more severe depressive symptoms

- **Hypothesis 2:** Significant differences in perceptions of Project UPLIFT will be found across socio-demographic variables. Specifically, students who are female, older, of higher socioeconomic status, white, and depressed will have more favorable perceptions about Project UPLIFT
- **Hypothesis 3:** Students who exhibit higher depressive symptoms will have more favorable perceptions about and will be more likely to use Project UPLIFT than students exhibiting fewer (or no) depressive symptoms
- **Hypothesis 4:** Students who have more favorable perceptions about Project UPLIFT will be more inclined to use the program
- **Hypothesis 5:** Depressed students who have more favorable perceptions about Project UPLIFT will be more inclined to use it than students who are depressed but have less favorable perceptions about Project UPLIFT

c. Target Journal

The Journal of American College Health (JACH) provides information pertaining to health in institutions of higher education and is intended for college health professionals such as administrators, professors, and psychologists. JACH publishes articles on a wide array of topics, including clinical and preventive medicine, health promotion and education, and mental health. The proposed study is an original project addressing perceptions of undergraduate and graduate students of a mental health program, whose ultimate purpose is to provide insight into whether technology-based mental health programs are a viable option for treatment and prevention of depression on college campuses. As such, JACH is an appropriate choice for submission.

d. Submission Criteria

Theoretical, scientific, and research manuscripts are considered "major articles," and should cover data that have been collected within the past five years. Major article manuscripts are to be 15 to 20 double-spaced pages (4,000-6,000 words), including tables, figures, and references. The following criteria must be followed in manuscript preparation:

- Submit your manuscript, including tables, as double-spaced Word files with minimal formatting in Times. Save it as a .doc, .rtf, or .ps file. Please use simple filenames and avoid special characters. Do not use word processing styles, forced section or page breaks, or automatic footnotes or references. Number every five lines in the document.
- Follow the *American Medical Association Manual of Style*, 10th edition, in medical and scientific usage.
- Abstract must be no longer than 150 words, be written in AMA format, and include these words as subheadings: Objective, Participants, Methods, Results, and Conclusions.
- Text in research articles must be divided into these headings: Methods, Results, and Comment (which must include the subheadings Limitations and Conclusions).
- Proofread carefully, double-checking all statistics, numbers, symbols, references, and tables. Authors are responsible for the accuracy of all material submitted.
- Indicate approval of the appropriate institutional review board (IRB) for all studies involving human participants and describe how participants provided informed consent.
- Provide written permission from publishers and authors to reprint or adapt previously published tables or figures.

II. Literature Review

a. Depression on a Global and National Scale

Depression impacts individuals from all walks of life and occurs in several different forms.[19] Characterized by symptoms such as depressed mood, loss of interest or pleasure in usual activities, feelings of guilt or low self-esteem, disrupted sleep or appetite, low energy, and poor concentration, depression can reoccur or become chronic, and may result in considerable impairment in an individual's functioning.[20] Depression is the most common public health condition, affecting nearly 121 million people worldwide.[20] In 2000, depression was the fourth leading cause of disability – as measured by disability-adjusted life years, or DALYs – and is projected to be the second leading contributor to DALYs for both men and women in all age groups by 2020.[20] Moreover, approximately 850,000 lives are lost each year due to depression-related suicide.[20]

Global patterns of depression are reflected in the epidemiology of depression in the United States. Approximately 20% of individuals residing in the United States suffer from a mental illness in any given year, and more than 19 million adults living in the U.S. are affected by depression.[21] Of all mental health conditions, depression is the most commonly diagnosed in the United States,[21, 22] with annual prevalence rates as high as 6.7%[23] and lifetime prevalence rates as high as 16.6%.[24] By 2050, it is estimated that the population with current depressive disorder will increase by 35.1% to a staggering 45.8 million.[25] Major depressive disorder (MDD) accounts for 8% of total disability-adjusted life years (DALYs),[26] and as the leading cause of disability in the U.S., MDD accounts for more than 67% of annual suicides.[21]

Depression not only results in a large number of suicides in the U.S., but also poorer general health and greater physical distress, dissatisfaction with life, and feelings of

inadequate social and emotional support among depressed individuals,[27] not to mention an estimated $44 billion in lost productive time (LPT) costs.[28] Depression disproportionately affects certain populations – women and non-Hispanic whites are significantly more likely to have a lifetime diagnosis of depression.[29] Furthermore, women, individuals who have either previously been married or never married and adults between 18 and 24 years of age are significantly more likely to exhibit current depressive symptoms.[25, 27, 29]

b. Depression in College and University Populations

Approximately half of young adults in the United States between the ages of 18 and 24 are enrolled in college either full or part time.[30] Moreover, 18- to 24-year-olds comprise an estimated 87% of the college population in the United States.[31] Undergraduate and graduate students are frequently viewed as being privileged, but like the general population, this group of young adults is not impervious to the burden of mental illness.[7] The prevalence of mental disorders among college students is similar to that of their non-attending peers – nearly half of all college students have experienced a psychiatric disorder within the past twelve months.[6] Consistent with studies conducted on the general population, subgroups of college-aged individuals experience a significantly higher prevalence of mental health problems. For example, male undergraduates are at higher risk for suicide, but female undergraduates are more likely than their male counterparts to screen positively for anxiety disorders and major depression.[7, 8] Additionally, students coming from lower socioeconomic backgrounds are at a higher risk for symptoms of depression and anxiety.[8]

c. Evidence-based Treatment of Depression

A plethora of evidence-based treatments for behavioral disorders (BD) are available to the adult population in the U.S. Tricyclic antidepressants (TCAs), monoamine oxidase

inhibitors (MAOIs), and selective serotonin reuptake inhibitors (SSRIs) constitute the three major classes of medications used to treat depressive disorders, and are joined by several new antidepressants which do not fall under a specific category.[32] The effects of antidepressant medications have been studied extensively, and pharmacological treatment of depression has generally been shown to be efficacious, so long as treatment regimens are maintained. Unfortunately, utilizing psychopharmacological interventions is not without risk – both of side effects during use and relapse of depressive symptoms once use has ceased.[32]

Although antidepressants have been the most frequently researched form of intervention, the body of evidence supporting psychotherapy is growing. In a recent review[33] it was shown that psychotherapy is indeed efficacious. Hollon and Ponniah[33] identified 101 randomized controlled trials which examined the effects of several types of psychotherapy on symptoms of major depressive disorder (MDD): experiential-humanistic psychotherapy, marital/family therapy, dynamic psychotherapy, interpersonal psychotherapy (IPT), behavior therapy (BT), cognitive-behavior therapy (CBT). Of these, IPT, BT, and CBT – most important to this discussion – were found to "meet the Chambless and Hollon criteria for being efficacious and specific in the treatment of MDD."[33(p925)] Furthermore, CBT demonstrated "enduring effects that prevent subsequent relapse and possibly recurrence following treatment termination."[33(p926)]

CBT encompasses a number of therapeutic approaches, including cognitive therapy (CT), a specific form of psychotherapy developed in the 1960s by Beck.[34, 35] CT is designed around Beck's "cognitive model of depression," which is based on several key concepts derived from observations within the clinical research setting: 1) individuals have assertions that occur "automatically, without prior reflection" which they accept as "valid" ("automatic thoughts"); 2) individuals may have errors in the way they think ("erroneous thinking"); and

3) one's feelings are largely dictated by the way one interprets experiences ("cognitive primacy" or "biased processing"). In summary, "…disorders are characterized by dysfunctional thinking… the dysfunctional thinking accounts for the affective and behavioral symptoms."[35(pp277-281)] Consequently, CT is a "structured, collaborative, short-term, and problem-focused approach" involving instructing individuals in the development of a variety of cognitive and behavioral skills they can use to tackle depression; cognitive behavioral therapy (CBT) represents a collection of approaches designed to target maladaptive thinking and behavioral patterns that lead to the development and maintenance of depression.[34]

Early outcome studies (prior to 1990) on the efficacy of CBT for depression revealed significant, positive results in favor of the approach. A meta-analysis of 27 different studies showed that CBT was more effective than other forms of therapy, including nondirective therapy, psychodynamic therapy, and behavior therapy; as expected, CBT was found to be more efficacious than no treatment at all.[36] Additionally, CBT was shown to be more effective at reducing depression than pharmacotherapy and the effects of CBT appeared more robust after treatment was concluded.[36] Strikingly, pharmacotherapy has been shown to be significantly less effective at preventing relapse of depression than CBT, even at 1-year and 2-year follow-up. Two early studies determined the superiority of CBT to pharmacotherapy, one of which demonstrated the relapse rate for CBT to be approximately half that of pharmacotherapy.[36] The Treatment of Depression Collaborative Research Program (TDCRP) conducted by the National Institute of Mental Health (NIMH) showed comparable effects between treatment with CBT versus pharmacotherapy (i.e., imipramine) across all patients, and more favorable outcomes for treatment with pharmacotherapy among severely depressed patients.[37] More recent studies (since 1990) have shown similar

trends when comparing CBT to antidepressant medication – use of CBT or medication yields comparable results in short-term treatment of depression and CBT is a better protective intervention against relapse.[34] Studies in which CBT has been administered after patients have recovered or partially recovered from an episode of depression demonstrated lower relapse rates in the CBT group as many as six years post-intervention; results from one of these studies have been replicated, further supporting the utility of CBT in preventing relapse of depression.[34]

Evidence clearly shows that CBT is applicable to different mental health disorders,[36] and besides demonstrating versatility in relation to treating different conditions, CBT has proven adaptable to various treatment settings. Recently, CBT has shown great promise for reducing symptoms of mental illness when applied in primary care settings,[38] and home-based CBT programs have also been shown to be effective.[39] Not only is CBT effective and applicable in treating a multitude of mental health disorders in numerous settings, but it is also delivered via numerous methodologies. CBT, in its original form, was an in-person intervention during which a single clinician engaged a single patient one-on-one.[35] Since the 1960s, CBT has been extended into couples and family therapy as well as group therapy, the latter of which has become one of the most common methods of administration. Group cognitive behavioral therapy is thought to be beneficial because it allows individuals to learn from each other and provides opportunities for behavioral modeling and development of social support amongst group members.[12] Segal, Williams and Teasdale developed a group intervention – known as mindfulness-based cognitive therapy (MBCT) – as a means of promoting recovery from and preventing relapse of depression.[40, 41] MBCT is an 8-week group therapy intervention that integrates the mindfulness-based stress reduction (MBSR) program developed by Kabat-Zinn and colleagues[42] with aspects of CBT for depression.[40, 37]

MBCT is intended to teach individuals to become more aware of the thoughts and feelings they experience, and to relate to them as temporary mental occurrences rather than factual representations of reality.[40] Though this approach draws on elements of CBT, such as psychoeducation about depression, MBCT is unlike CBT in that participants are encouraged to recognize thoughts and feelings without changing their content or assigning them specific meanings.[40, 41, 43] MBCT has become increasingly popular in treatment of mood and anxiety disorders, and several programs based on this treatment model have been developed.[44] More importantly, MBCT has been shown to be effective for preventing depressive relapse[40, 45] and reducing current or residual depression.[43, 46-49]

Other than face-to-face delivery, CBT-based interventions have also been developed for administration via telephone and the Internet. Telephone-administered CBT is effective at improving depressive symptoms,[39, 50-53] as are computerized CBT programs.[54-57] Project UPLIFT (Using Practice and Learning to Increase Favorable Thoughts) is a novel, MBCT program for depression and is comprised of eight sessions delivered either via telephone or the Internet. The program has been shown to significantly decrease depressive symptoms in both Internet and telephone intervention groups. Though both intervention groups showed significant reductions in depressive symptoms, they did not significantly differ from one another, indicating that both methods of delivery are equally effective.[12] Utilization of telephone- and computerized CBT may be beneficial for two main reasons. Firstly, CBT is not widely available, and distance delivery via phone or the Internet increases access to a service which might otherwise be inaccessible to certain populations.[12] Secondly, distance delivery of CBT is cost-effective.[58] As a result, more individuals will be able to access and receive adequate treatment for mental illness than before, not to mention adherence rates are likely to increase.

Researchers have only recently begun to explore the benefits of CBT use among college and university students. According to several studies,[59-62] CBT is effective for treating depression in individuals attending post-secondary institutions, and also aids in ameliorating symptoms of stress and anxiety. Telephone and computerized CBT, in particular, may be well-suited for university settings particularly because modern students are "digital natives" and have a high degree of familiarity with and expertise in phone and internet use.[63]

d. Utilization & Perceptions of Treatment

Despite the fact that treatment is available to many students through counseling centers on their campus, a significant number of individuals are going without it. As few as 25% of college students diagnosed with depression in the American College Health Association-National College Health Assessment were receiving treatment;[64] Blanco et al.[6] found that fewer than half of college students who met criteria for any mood disorder and fewer than 20% of students with anxiety disorders were actually receiving treatment. Results from studies conducted at specific colleges and universities paint a slightly less dismal picture than do results obtained from national surveys. Among students who were currently experiencing elevated depressive symptoms and/or met criteria for MDD, anywhere from 27% to 36% had received some form of treatment at the time of the study.[65-69]

Numerous studies have delineated barriers that contribute to low mental health service utilization rates among college students, the majority of which are rooted in students' perceptions and attitudes. Lack of time, knowledge, and motivation are among the self-reported reasons for not using mental health services,[66, 69] in addition to a lack of perceived need for services.[11, 66, 67] Worry about the anonymity of services is another factor identified in the literature,[66, 69] as is stigma (e.g., public stigma, personal stigma, perceived public stigma,

self-stigma).[10] Belief that mental health services will not help is often cited as a barrier to service utilization among this population;[66, 67, 69] perceived credibility and acceptability of various treatment modalities must also be considered as potential factors influencing help-seeking behaviors[70-73] and treatment outcome[74] of college students.

Hall and Robertson[72] presented a group of undergraduates with descriptions of five common approaches for treating depression – CBT, IPT, CBT combined with pharmacotherapy, IPT combined with pharmacotherapy, and support group therapy combined with pharmacotherapy – and found that CBT alone was considered more acceptable than IPT and all of the combined treatments. One additional study pertaining to perceived credibility of CBT among college students was identified for this review. Mitchell and Gordon[75] assessed student perceptions of a computerized CBT (CCBT) program at two time points, the second assessment occurring immediately after they attended a 30-minute demonstration of select parts of the program. Scores for credibility, expectancy-for-improvement, and likelihood of using CCBT increased significantly from time one to time two.[75]

Given the implications for policy-making and understanding help-seeking behaviors of college students requiring mental health services, it is imperative to further examine the impact of student perceptions of treatment. Research regarding student perceptions of CBT is sparse, and no study has been conducted on students' perceptions of an MBCT program. In an effort to address this lack in knowledge, this study was conducted to examine university students' perceptions about an MBCT program, Project UPLIFT, and whether their experience of depression and perceptions influence the likelihood that they would use the program, should it become available.

III. Data Collection, Analysis & Results

a. Method

i. Participants

Emory University undergraduate and graduate students were chosen as potential participants in the study. A list of email addresses for all current Emory students was obtained from the Registrar's Office. The Registrar's Office holds an electronic register containing records for every student attending Emory – the resultant sampling frame mapped perfectly onto the target population, thus eliminating coverage error. During the 2010-2011 academic year a total of 13,016 students (including the Principal Investigator) attended Emory University.

Initially, eligibility was assessed by using the sampling frame obtained from the Registrar's Office to confirm whether students were current enrollees. Secondly, students were required to endorse the appropriate response to each of the required questions at the bottom of the online consent form (see Appendix A). Those who did not meet the first two criteria or did not provide consent were automatically re-directed to the last page of the survey and were not allowed to participate in the study.

ii. Measures

Background information was collected from each participant. This included age, gender, racial/ethnic group, socioeconomic status, school of attendance (i.e., Emory College, Oxford College, School of Public Health, School of Nursing, etc.), undergraduate versus graduate or professional level of education, and full- versus part-time status. Students were also asked questions regarding past and current use of antidepressant medications, past and current use of psychotherapy or counseling services, and prior diagnosis of depression.

Current depression was assessed using the PHQ-9.[76] Each item of the instrument corresponds to a distinct depressive symptom, and participants rated how frequently they had experienced these symptoms during the past two weeks. Each item of the instrument can be scored from 0 (not at all) to 3 (nearly every day), and total scores can range from 0 to 27, with higher scores indicating more severe depression. The PHQ-9 has been shown to be both valid and reliable when measuring depression, with Cronbach's α coefficients ranging from 0.79 to 0.89; validity and reliability of the instrument were demonstrated when administration occurred in clinical settings and among individuals from diverse racial and ethnic backgrounds.[76, 77]

Perceptions about Project UPLIFT were measured using a scale developed by the Principal Investigator for the purpose of this study (see Appendix B). Areas of interest included usefulness ("Do you believe this program would be beneficial to you/other students?"), ease of use ("How easy to use do you feel [the program] would be?"), and relative advantage of Project UPLIFT compared to other forms of mental health treatment ("How beneficial do you think [the program] would be relative to…?"). Perceptions of the phone (qq.36-39) and internet (qq.40-43) versions of Project UPLIFT, as well as the program as a whole (qq.44-50), were assessed. For each version of the program, perceived usefulness (PU) and perceived ease of use (PEOU) were measured on four-point Likert scales using two separate items, and can be scored from 0 (not at all) to 3 (extremely); relative advantage (RA) of Project UPLIFT compared to antidepressant medication and other forms of therapy or counseling were measured on five-point Likert scales using four separate items, and can be scored from 0 (not at all) to 4 (much more). Two dichotomous questions in the perception scale assessed whether students perceived the program to be worthwhile by asking them to respond yes (1) or no (0). Participants were asked to indicate

how helpful they felt Project UPLIFT would be for preventing and treating depression using four items based on four-point Likert scales. Each of these items can be scored from 0 (not at all) to 3 (extremely). Preference for the phone or internet version of the program was measured on five-point Likert scales using two items, with lower scores corresponding to preference for the phone version and higher scores corresponding to preference for the internet version. Finally, two items assessed behavioral intention (BI) to use Project UPLIFT – should it become available at Emory – on five-point Likert scales, with 1 being the lowest score (very unlikely) and 5 being the highest (very likely). An overall perception score was calculated for each participant by summing their scores for all individual items except the two pertaining to which version was preferred (see Appendix B; qq. 48&49). Overall perception scores can range from 0 to 76, and higher overall perception scores indicated more favorable perceptions of Project UPLIFT.

iii. Procedure

Contact was established and maintained via email throughout the duration of the study. Prior to deployment, the survey was reviewed by experts in the field – including the creator of the mental health program of interest, Project UPLIFT – in order to ensure that items within the survey corresponded to the variables and constructs of interest; suggested changes were incorporated into the final survey. An introductory email message containing study information and a link to the survey was sent to the email address of all Emory University students, with the exception of the PI - 13,015 in total. Students were required to click the link provided in order to be directed to the survey. After the introductory email was sent out, a reminder email message was sent on a weekly basis until an adequate sample size was reached. As an incentive, students were offered the option to be entered into a random drawing for one of twenty (1 of 20) Barnes & Noble e-gift cards valued at $15. The random

drawing took place after data collection was complete. Winners received notification and an electronic gift (e-gift) card delivered to their Emory University email address.

Data were collected through a web-based survey administered via Survey Gizmo, an online questionnaire development and administration service. After providing demographic information and completing items pertaining to past and current use of antidepressant medications, past and current use of psychotherapy or counseling services, prior diagnosis of depression, the PHQ-9, and prior exposure to phone-based and internet-based depression programs, participants were provided a detailed description of Project UPLIFT. Participants subsequently answered questions regarding their perceptions about the program. The estimated time required to complete the entire survey was 15 minutes.

Information collected on potential participants and those who completed the survey was saved in an Excel document and was not available to any other parties besides the study team (unless required by law). An ID number was assigned to each participant after they completed the survey. ID numbers and other identifying information were stored in a separate document from participants' survey data. Confidentiality was assured by using an encrypted website to administer the survey and download all data. Furthermore, once data were downloaded and saved in the appropriate format, confidentiality continued to be upheld by applying password-protection to all electronic files and by storing all data files on a password-protected flash drive. The study team was in possession of the flash drive on which data were stored; only members of the study team had the password(s) for these files and devices. After the random drawing and distribution of incentives, all electronic files containing identifying information of any kind were destroyed.

Students were required to provide consent by checking the appropriate box on the first page of the survey after reading information about the study provided in an online

consent form. Only students who met other inclusion criteria and provided informed consent were allowed to continue with the survey. Those who did not consent were automatically re-directed to the last page of the survey and were not able to participate in the study.

iv. Analysis

Data obtained via the web-based survey were downloaded from the Survey Gizmo server and imported into SPSS (PASW) 18. A number of statistical procedures were utilized in order to address the aims and hypotheses of the study. Descriptive statistics and frequencies were generated to determine the demographic characteristics of the sample. A reliability analysis was conducted to determine whether the perception scale was, in fact, a reliable instrument. In order to determine the proportion of participants that reported different levels of severity of depression, depression score was recoded such that scores fell into one of five categories: none (0-4), mild (5-9), moderate (10-14), moderately severe (15-19), or severe depression (20 or greater);[76] frequencies were subsequently generated for each category. Categorical variables were recoded into "dummy" variables, with the sub-group of interest being coded as a one (e.g., Black/African American =1), and all other groups being coded as a two (2); dichotomous variables were also coded in this manner. In order to control for all independent variables simultaneously, associations between socio-demographic variables, depression score, and perception score were evaluated using full multiple linear regression (MLR) models.

Pearson's r was used to determine the correlation between depression score and perception score. Depression scores were recoded so that students were classified as experiencing depression (score ≥5 on the PHQ-9) or not experiencing depression (score <5 on the PHQ-9), and an independent samples t-test was run to determine whether perception

scores differed significantly in the absence or presence of depressive symptoms at the time of the study. ANOVA was utilized to assess whether the relationships between level of severity of depression and perception scores were significant. If a significant difference was found among the five groups, post hoc tests were used to determine exactly which groups differed significantly.

Pearson's r was used to examine the correlation between depression score and behavioral intention to use Project UPLIFT, and an independent samples t-test was run to determine whether behavioral intention differed significantly in the absence or presence of depressive symptoms at the time of the study. ANOVA was utilized to assess whether the relationships between level of severity of depression and behavioral intention were significant. If a significant difference was found among the five groups, post hoc tests were used to determine exactly which groups differed significantly. Correlation between perception score and behavioral intention to use Project UPLIFT was also assessed using Pearson's r. Perception scores were recoded into three categories: low, or less favorable (0-25), moderately favorable (26-50), and high, or more favorable (51-76). Subsequently, a two-way ANOVA was used to determine whether an interaction existed between level of severity of depression and perceptions about Project UPLIFT, and how that interaction affected behavioral intention to use the program. After stratifying the sample by the severity of their symptoms (e.g., none, mild, moderate, moderately severe, severe), ANOVA was used to determine whether students' perceptions (e.g., low, moderate, high) about Project UPLIFT were associated with their likelihood of using the program. If a significant difference was found among the groups, post hoc tests were used to determine exactly which groups differed significantly. Alpha was set at 0.05 for all statistical tests.

b. Results

A total of 1,559 individuals participated in the study. These participants were individuals who began and made it through the final page of the web-based survey.

i. Demographic Variables

The mean age of the sample was approximately 24.2 (SD=5.8), and the majority of the sample (n=956; 61%) was between the ages of 18 and 24. The greatest frequencies of participants were female (n=1,126; 72%), graduate or professional students (n=817; 52%), currently enrolled in the Emory College (n=531; 34%), full-time students (n=1,465; 94%), single and never married (n=1,199; 77%), heterosexual (n=1,427; 92%), U.S. citizens (n=1,306; 84%), and white (n=908; 62%). When asked to report their parents' annual income before taxes, the largest proportion of students indicated that their parents made $100,000 or more (n=577; 37%) and that their parents' income was "enough to make ends meet" (n=713; 46%). A comparison of various demographic variables among the study sample and Emory University is available in Table 1, and information on other demographic variables that are specific to the study sample is presented in Table 2.

ii. Mental Health Treatment

Fifteen percent (n=230) of students surveyed indicated that they had taken an antidepressant within the past year, and 12% (n=184) of students were taking an antidepressant at the time of the survey. A total of 411 participants (26%) reported seeing a therapist or counselor within the past year, and 224 participants (14%) were seeing a therapist or counselor at the time of the survey (Table 3).

iii. Reliability Analysis

The full 20-item perception of Project UPLIFT scale attained Cronbach's alpha reliability of .898, which denotes a high degree of reliability of the scale.

iv. Depression

The overall mean score on the PHQ-9 was 5.5 (SD=5.1), which corresponds to symptoms of mild depression;[76] scores ranged from 0 to 27. Only 10% of students reported having been diagnosed with depression by a doctor within the past year; the percentage of students who reported they had been diagnosed with depression was approximately equal to that found in the most recent American College Health Association-National College Health Assessment.[78] However, nearly half (n=705; 45%) of the sample met criteria for mild to severe depression, according to students' self-reported experience of mental health problems on the PHQ-9 (Table 3); 27% (n=427) were mildly depressed, 11% (n=172) were moderately depressed, 5% of students (n=72) had symptoms indicative of moderately severe depression, and 2% (n=34) were severely depressed (Table 4). The distribution of respondents by depression severity category was similar to that found in a recent study of Emory University undergraduate students, with the exception of the no depression and moderate depression categories – in this study more than half of the participants were not depressed, whereas Garlow et al.[79] found that most students were moderately depressed. Additionally, a large number of students (n=678; 44%) reported that the problems they had experienced within the past two weeks had made it somewhat difficult for them to do work, take care of things at home, or get along with other people. Fewer than half of the students (n=565; 36%) indicated that the problems they had experienced in the past two weeks had not made it difficult at all for them to function (Table 5).

Multiple linear regression was conducted to evaluate the association between socio-demographic variables and depression score. Multicollinearity within the sample was assessed by several means. A collinearity matrix showed that Pearson's correlation coefficients among all independent variables were smaller than 1, with 12-month and current antidepressant use being the most highly correlated ($r=.879$, $\alpha=.01$); all tolerance values were

greater than .10, the lowest of which being .107; and all variance inflation factors (VIFs) were less than 10, the greatest of which was 9.349. The full model was significant ($F(39,1352)=8.19$, $p<.001$) and several factors were significant in predicting depression after controlling for all variables (Table 6). Emory law students ($p=.011$) and students attending Oxford College ($p=.034$) reported significantly higher depression than did students attending Emory College. Students who reported that their parents' annual income was "not enough to make ends meet" scored significantly higher on the PHQ-9 than students whose parents' income was "enough to make ends meet" ($p=0.016$). Conversely, students whose parents' income was reported as being "more than enough to make ends meet" scored significantly lower on the PHQ-9 than those whose parents' income was "enough to make ends meet" ($p=.001$). Not surprisingly, students who had not taken an antidepressant within the past year scored significantly lower than those who had been on an antidepressant within the past year ($p<.001$); students who were not taking an antidepressant at the time of the study scored significantly higher than those who were on an antidepressant ($p=.004$); students who had not seen a therapist within the past year scored significantly lower than those who had ($p=.019$); and those who had not been diagnosed with depression within the past year scored significantly lower than those who had been diagnosed with depression within the past 12 months ($p<.001$). The following factors did not significantly predict depression: age ($p=.846$); being male ($p=.089$), transgender ($p=.512$), or of some other gender ($p=.215$); level of study ($p=.295$); attending the Business School ($p=.962$), Laney Graduate School ($p=.792$), School of Medicine ($p=.163$), School of Nursing ($p=.191$), School of Public Health ($p=.923$), or School of Theology ($p=.428$); enrollment status ($p=.075$); being in a domestic partnership ($p=.941$), married ($p=.348$), separated ($p=.602$), divorced ($p=.536$), or in some other type of relationship ($p=.793$); identifying as being gay/lesbian/queer ($p=.350$),

bisexual (p=.898), or of some other sexual orientation (p=.930); indicating that your parents' annual income was between $0 and $24,999 (p=.545), $25,000 and $49,999 (p=.765), $50,000 and $74,999 (p=.609), or $75,000 and $100,000 (p=.444); nationality (p=.152); identifying as being Asian (p=.239), Black/African American (p=.911), multiracial (p=.258), of some other race (p=.459), or Hispanic (p=.117); and currently seeing a therapist or counselor at the time of the study (p=.178).

v. Perceptions about Project UPLIFT

The mean perception score for the sample was 30.0 (SD=9.8); scores ranged from 2 to 68. Multiple linear regression was conducted to examine the association between socio-demographic variables (including depression score) and perception score. As with the previous MLR analysis, multicollinearity within the sample was assessed by several means. The collinearity matrix showed that Pearson's correlation coefficients among all independent variables were smaller than 1, with 12-month and current antidepressant use being the most highly correlated (r=.879, α=.01); all tolerance values were greater than .10, the lowest of which being .107; and all variance inflation factors (VIFs) were less than 10, the greatest of which was 9.349. The full model was significant ($F(40,1351)=2.37$, $p<.001$), and several factors were significant in predicting perception of Project UPLIFT after controlling for all variables (Table 7). Nursing students had significantly more favorable perceptions about the program than did students attending Emory College (p<.001). Students whose parents' income was between $75,000 and $99,999 scored significantly higher than those whose parents' income was $100,000 or more (p=.028) and students whose parents' income was "not enough to make ends meet" also had significantly higher perceptions about Project UPLIFT than students whose parental income was "enough to make ends meet" (p=.023). Black students had significantly higher perceptions of the program than White students

(p=.005). As depression scores increased, perception scores increased significantly, as well (p=.019), with all other variables controlled. The following factors did not significantly predict perception: age (p=.559); being male (p=.459), transgender (p=.135), or of some other gender (p=.313); level of study (p=.872); attending the Business School (p=.832), Laney Graduate School (p=.848), School of Law (p=.226), School of Medicine (p=.510), Oxford College (p=.968), School of Public Health (p=.364), or School of Theology (p=.656); enrollment status (p=.106); being in a domestic partnership (p=.446), married (p=.140), separated (p=.417), divorced (p=.156), or in some other type of relationship (p=.257); identifying as being gay/lesbian/queer (p=.642), bisexual (p=.134), or of some other sexual orientation (p=.774); indicating that your parents' annual income was between $0 and $24,999 (p=.285), $25,000 and $49,999 (p=.081), $50,000 and $74,999 (p=.705), or "more than enough to make ends meet" (p=.123); nationality (p=.214); identifying as being Asian (p=.910), multiracial (p=.303), of some other race (p=.743), or Hispanic (p=.796); having taken an antidepressant within the past year (p=.311); currently taking an antidepressant (p=.850); having seen a therapist or counselor within the past year (p=.806); currently seeing a therapist or counselor at the time of the study (p=.805); and having been diagnosed with depression within the past year (p=.422).

Depression score alone was not significantly correlated with perceptions about Project UPLIFT (r=.038, p=.139). Results of the independent samples t-test showed that students who were not depressed at the time of the study did not have significantly different perceptions of Project UPLIFT than those who were depressed (t=-1.47, df=1553, p=.141). No statistically significant difference was observed in perceptions about the program across level of severity of depression (F(4,1550)=1.82, p=.123).

vi. Behavioral Intention to use Project UPLIFT

The mean behavioral intention (BI) score was 2.4 (SD=1.2); scores ranged from 1 to 5. A significant, positive correlation between depression score and behavioral intention to use Project UPLIFT was observed ($r=.257$, $\alpha=.01$, $p<.001$). An independent samples t-test was run to determine whether behavioral intention to use Project UPLIFT differed between those with presence and absence of depressive symptoms. Students who were depressed reported significantly higher intention to use Project UPLIFT, assuming it became available at Emory University, than did students who were not depressed ($t=-9.57$, $df=1551$, $p<.001$).

A statistically significant difference in behavioral intention was observed across level of severity of depression ($F(4,1548)=26.37$, $p<.001$; Table 8). Tamhane's post hoc tests suggest that behavioral intention among students who reported no depressive symptoms (mean=2.10, SD=1.13) was significantly lower than that of students who were mildly depressed (mean=2.56, SD=1.19, $p<.001$), moderately depressed (mean=2.87, SD=1.22, $p<.001$), experiencing moderately-severe depression (mean=2.81, SD=1.29, $p<.001$), and severely depressed (mean=2.97, SD=1.47, $p=.016$). Mildly depressed students had significantly higher BI scores than students who were not depressed ($p<.001$) and significantly lower intention to use Project UPLIFT than moderately depressed students ($p=.046$); no statistically significant difference in behavioral intention was found between mildly depressed students and students reporting both moderately-severe ($p=.739$) and severe depression ($p=.708$). Moderately depressed students had significantly higher BI scores than students who were not depressed ($p<.001$) and students who were mildly depressed ($p=.046$); no statistically significant difference in behavioral intention was found between moderately depressed students and students reporting both moderately-severe ($p=1.00$) and severe depression ($p=1.00$). Students experiencing moderately-severe depression had significantly higher BI scores than students who were not depressed ($p<.001$); no statistically

significant difference in behavioral intention was found between students reporting moderately-severe depression and students reporting mild ($p=.739$), moderately-severe ($p=1.00$) and severe depression ($p=1.00$). Severely depressed students were significantly more likely to use Project UPLIFT than students who were not depressed ($p=.016$); no statistically significant difference in behavioral intention was found between severely students and those experiencing mild ($p=.708$), moderate ($p=1.00$) and moderately-severe depression ($p=1.00$).

Although perception scores were not significantly correlated with depression scores when other variables were not controlled, there was a significant positive correlation between perception score and behavioral intention to use Project UPLIFT ($r=.518$, $\alpha=.01$, $p<.001$). After perception scores were recoded into categories (e.g., low, or less favorable perception, moderately favorable perception, and high, or more favorable perception), a two-way ANOVA was used to determine whether an interaction existed between level of severity of depression and perceptions about Project UPLIFT, and how that interaction affected behavioral intention to use the program. A significant main effect for level of severity of depression was observed ($F(4,1538)=6.68$), $p<.001$; Table 8), indicating that students who are more severely depressed are significantly more likely to use Project UPLIFT. The main effect for level of perception was significant as well ($F(2,1538)=88.53$), $p<.001$; Table 9), indicating that students who have more favorable perceptions of Project UPLIFT have a significantly higher intention to use the program. Bonferroni's post hoc tests suggest that students with a low perception of Project UPLIFT are significantly less likely to use the program than students with moderately favorable ($p<.001$) and high perceptions ($p<.001$). Furthermore, students with moderate perceptions of the program are significantly less likely to use Project UPLIFT than students with high perceptions ($p<.001$). The

interaction effect was significant ($F(8,1538)=2.20$, $p=.025$; Table 10), indicating that students who are more depressed and have more favorable perceptions of Project UPLIFT are significantly more likely to use it than their counterparts.

After stratifying the sample by severity of depression, ANOVA was utilized to determine where differences in behavioral intention to use Project UPLIFT could be found across perception groups, in each depressive category. Among those who were not depressed, there was a significant difference in behavioral intention according to perception ($F(2,845)=72.36$, $p<.001$; Table 10). Tamhane's post-hoc tests revealed that students who had low perceptions of Project UPLIFT were significantly less likely to use the program than those who had moderately favorable ($p<.001$) and high perceptions of the program ($p=.001$). No statistically significant difference in behavioral intention was found between students who had moderate perceptions of Project UPLIFT and those who had high perceptions of the program ($p=.061$).

Among those who were mildly depressed, there was a significant difference in behavioral intention according to perception ($F(2,424)=57.71$, $p<.001$; Table 10). Tamhane's post-hoc tests revealed that students who had low perceptions of Project UPLIFT were significantly less likely to use the program than those who had moderately favorable ($p<.001$) and high perceptions of the program ($p<.001$). Students who had moderate perceptions of the program were significantly less likely to use it than students who had high perceptions of Project UPLIFT ($p<.001$).

Among those who were moderately depressed, there was a significant difference in behavioral intention according to perception ($F(2,169)=36.21$, $p<.001$; Table 10). Tamhane's post-hoc tests revealed that students who had low perceptions of Project UPLIFT were significantly less likely to use the program than those who had moderately favorable

($p<.001$) and high perceptions of the program ($p<.001$). Students who had moderate perceptions of the program were significantly less likely to use it than students who had high perceptions of Project UPLIFT ($p<.001$).

Among those with moderately severe depression, there was a significant difference in behavioral intention according to perception ($F(2,69)=21.70$, $p<.001$; Table 10). Bonferroni's post-hoc tests revealed that students who had low perceptions of Project UPLIFT were significantly less likely to use the program than those who had moderately favorable ($p<.001$) and high perceptions of the program ($p<.001$). No statistically significant difference in behavioral intention was found between students who had moderate perceptions of Project UPLIFT and those who had high perceptions of the program ($p=.088$).

Among those with severe depression, there was a significant difference in behavioral intention according to perception ($F(2,31)=6.03$, $p=.006$; Table 10). Tamhane's post-hoc tests revealed that students who had low perceptions of Project UPLIFT were significantly less likely to use the program than those who had moderately favorable perceptions of the program ($p=.002$). No statistically significant difference in behavioral intention was found between students who had high perceptions of Project UPLIFT and those who had low ($p=.959$) and moderate perceptions of the program ($p=.996$).

IV. Discussion

After reviewing the literature extensively, it appears that this is only the second study that has examined the perceptions college students have about a technology-based CBT program. The present study was the first research study conducted that evaluated the associations between demographic characteristics, depression, and perceptions and behavioral intention to utilize a technology-based MBCT program, Project UPLIFT, in a university setting. It is clear that the sample was not representative of Emory University as a whole, particularly when considering that the majority of participants were female or graduate students. The sample was more similar to the population regarding other demographic variables; however, even these proportions were not equivalent, which also indicates that the sample was not representative of the University at large.

Relatively few students reported having taken an antidepressant or seeing a therapist within the past year, and relatively few students reported that they were taking an antidepressant or seeing a therapist or counselor at the time of the study. Prevalence and severity of depressive symptoms found among this sample indicate that depression is a substantial problem for many college students. With all other variables controlled, several socio-demographic factors were associated with increases in depressive symptoms and more favorable perceptions of Project UPLIFT. School of attendance, parental income, and mental health treatment impacted students' experience of depression. More specifically, students who engaged in any form of treatment within the past year or were receiving treatment at all at the time of the study reported significantly higher levels of depression than their counterparts. School of attendance and parental income also significantly impacted students' perceptions of Project UPLIFT. Black students had significantly more favorable perceptions of the program than White students, and more depressed students had more

favorable perceptions of the program. With other variables controlled, data showed that depression was significantly associated with students' perceptions about Project UPLIFT. This was not the case when other variables were not controlled – depression scores were not correlated with perception scores, nor were there significant differences found in perception scores between students who were and were not depressed, or across level of severity of depression.

Students' depression and perceptions about Project UPLIFT significantly influenced the likelihood that students would use the program if it were available. Higher depression scores were significantly associated with higher intention to use the program, as were the presence of depressive symptoms (as compared to the absence of depressive symptoms) and higher levels of severity of depression. Higher perception scores were significantly correlated with a higher likelihood of program use. Commensurate with the main effect for level of severity of depression on behavioral intention, a significant main effect for level of perception about Project UPLIFT was also found. An interaction effect between level of severity of depression and perceptions about the program was observed as well; as severity of depression and favorability of perception increased, differences in likelihood of using Project UPLIFT became less significant.

a. Previous Research

Although a relatively small percentage of the participants reported receiving a depression diagnosis within the past year, a much larger proportion of students were experiencing mild to severe depression at the time of the study. These findings support the notion that despite the fact that many students successfully negotiate the challenges accompanying transition into independent adulthood, depression is prevalent on college and university campuses.[65] Indeed, prior studies have shown elevated rates of depression among

college students in recent years.[6-8] It is encouraging to note that: 1) as severity of depression increased in this sample, the proportion of students reporting that level of depression decreased, 2) the average score on the PHQ-9 was only 5.5 (mild depression), and 3) more than one-third of the sample reported that their depressive symptoms had not caused them any difficulty at all within the past two weeks. Unfortunately, the majority of the sample did report that their depression had made it somewhat difficult to function within the past two weeks, further underscoring the adverse effects depression can have among college students.

There was no significant difference in depressive symptoms by gender, which is contrary to research demonstrating that female students are more likely to screen positive for depressive disorders than males.[8, 80, 81] One possible explanation is that though the sample was predominantly female, a substantial proportion of the sample was not depressed or only mildly depressed at the time of the study, thus decreasing the likelihood that a significant difference would be observed between male and female students. Moreover, the smaller proportion of males who participated in the study may not be representative of all males attending Emory University in that they may have been experiencing more depressive symptoms, and would therefore more closely resemble those who were depressed. Controlling for all other variables during data analysis may also serve to explain why a statistically significant difference in depression was not observed across gender.

A number of demographic variables were not addressed in the primary hypotheses, as it was yet unclear as to what influence, if any, they would have on students' depressive symptoms. For example, discipline (school of attendance) was not initially thought to be a factor that would significantly affect differences in depression within the sample. However, after controlling for all other socio-demographic variables, law students and Oxford College students had significantly higher depression than students in Emory College. Ultimately, the

finding that school of attendance was a predictor of depression was not surprising, as the literature does suggest that law students self-report symptoms of depression and anxiety at a significantly higher rate than medical students and the general population.[82] Few studies have examined differences in depression levels across disciplines;[81] this study adds to the literature in this regard.

One of the main findings regarding demographics and depression was that students whose parents' income was reportedly "not enough to make ends meet" had significantly higher depression than those whose parental income was "enough to make ends meet," and students whose parental income was "more than enough to make ends meet" scored significantly lower than those whose parent's income was reportedly "enough." Taken together, these results suggest lower parental income (and, by proxy, socioeconomic status) is significantly associated with more severe depression. This finding supports prior studies conducted among college students; Eisenberg et al.[8] and Weitzman[80] found that college students from low SES families were more likely to have current mental health problems, including depression.

Akin to several of the socio-demographic variables measured in this study, prior mental health treatment was not accounted for in the primary hypotheses, though it was considered to be a potential confounder and included in the web-based survey. Students who did not receive any kind of treatment for depression (e.g., antidepressant medication, or therapy or counseling) within the past year reported significantly lower depressive symptoms than students who had received any treatment at all within the same period. Additionally, students who had not been diagnosed with depression by a doctor within the past 12 months had significantly lower depression scores than students who had been diagnosed with depression within the year. Most interestingly, students who had not seen a therapist or

counselor within the past year scored significantly higher on the PHQ-9 than students who had seen a mental health professional within this timeframe. Previous research has established that pharmacotherapy use does not have the same impact on reducing depression as psychotherapy,[34, 35, 37] and this finding may not only be an indicator of unmet mental health need among this sample of students, but also a testament to the potential benefits of seeking out and engaging in therapy or counseling. Perceived need for mental health services among students in this sample – or lack thereof – may help to explain these phenomena, but the research in this area has had mixed results. On the one hand, students who screen positive for depression on the PHQ-9 are significantly more likely to perceive a need for and to receive services,[67] and students with co-occurring depression and alcohol use had significantly higher rates of perceiving a need for mental health help.[9] But, in a recent longitudinal study[11] a high degree of lack of perceived need for services was found both at baseline and at follow-up two years later. The common finding between these studies, the current study, and others,[6, 65, 66, 68] regardless of whether or not perceived need for care was measured, is that mental health service utilization rates remain low among college students. One study[66] found that not having enough time, lack of knowledge of services available, embarrassment about using services, and not believing that services would actually help were the top reasons students gave for not accessing services on campus when they were needed.

Determining the associations between socio-demographic variables and students' perceptions about Project UPLIFT was another primary aim of this study. Counter to the hypothesis, after controlling for all socio-demographic variables, neither gender nor age significantly predicted perceptions about the program. As was the case for depression, discipline (school of attendance) and parental income significantly predicted perception scores. Nursing students at Emory had significantly higher perception scores – indicating

more favorable perceptions of the program – than did students enrolled in Emory College. Students whose parents earned between $75,000 and $99,999 had significantly higher perception scores than those whose parents made at least $100,000. Also contradictory to what was hypothesized was the finding that students who reported income as "not enough to make ends meet" had significantly higher perception scores than students who claimed their parents' income was "enough to make ends meet." Eisenberg et al.[67] found that being female, older, and of lower socioeconomic status positively and significantly predicted a perceived need for services. DOI[13, 14] and TAM[15, 16] posit that external variables influence how an innovation is perceived by an individual; perceived need, in particular,[13, 14] possibly impacted students' perceptions of the utility of Project UPLIFT. In this manner, the results observed in this study are contrary to the finding that gender and age are associated with higher perceived need for services, yet support the finding that lower socioeconomic status is associated with higher perceived need for mental health services.

Black students had significantly higher perceptions of Project UPLIFT than did White students. Recent studies pertaining to preferences in treatment among racially diverse samples may shed some light on the nature and direction of this outcome. In a national study of adults in the U.S., Givens et al.[83] showed that African Americans were less likely to believe that medications were effective, more likely to prefer counseling to medications, and more likely to believe that antidepressants were addictive and prayer and counseling were effective methods of treating depression. Since Project UPLIFT is a therapeutic intervention, it is possible that Black students favor it for the aforementioned reasons. In 2011, one study[84] found that African American college students were more likely to take advantage of informal activities to help deal with distress than White students. It follows, then, that underlying cultural differences in how mental health and treatment are perceived lead to

disparate preferences in methods of treating depression.[84-86] The finding that perception scores increased significantly as depression scores increased (while controlling for other variables) was not unexpected. As discussed earlier, perceived need may be mediating the relationship depression has to perception of mental health services in general and Project UPLIFT in particular. When other variables were not controlled, depression was not significantly associated with perceptions of Project UPLIFT. It is not clear as to how or why, but it appears that the relationship between students' depression and perceptions is only significant within the context of other factors.

Behavioral intention as a function of depression and perceptions about Project UPLIFT was the final association examined in this study, and several hypotheses were supported by the results. Self-reported likelihood of using Project UPLIFT, if it were to become available at Emory University, was positively and significantly correlated with depression score. Additionally, students who were depressed reported significantly higher intentions to utilize Project UPLIFT than students who were not depressed. Across all levels of depression, a significant dose-response relationship to behavioral intention was found, suggesting that as level of severity of depression increases, behavioral intention to use Project UPLIFT increases significantly as well.

Perception scores were also positively and significantly correlated with self-reported likelihood of using Project UPLIFT. Main effects for level of depression and level of perception about the program, in addition to a significant interaction effect between the two variables – as demonstrated by two-way ANOVA – further supported the hypotheses of this study. Students who had the least favorable perceptions were significantly less likely to use the program than the other groups, and both subsequent groups had significantly higher behavioral intentions toward program use. Subsequent analyses conducted after stratifying

the sample by depression severity category sought to characterize the nature of the interaction effect across all levels of depression. Students who were not depressed and had the least favorable perceptions about Project UPLIFT were significantly less likely to use the program than all students who were not depressed but had more favorable perceptions. Significant differences in BI score between all three perception categories did, in fact, hold for students who were mildly and moderately depressed. For moderately- severe and severe depression, a significant difference in BI score was found among levels of perception, however, as the level of severity of depression increased, the number of groups that significantly differed from one another decreased. This is most likely due to the decreasing number of students who were experiencing more severe depressive symptoms at the time of the study. Perhaps, having a larger proportion of students in these depressive categories would provide the statistical power necessary to demonstrate the same tendency found among students with less severe depressive symptoms.

The DOI model and TAM can more than adequately explain the finding that more favorable perceptions are significantly associated with higher intention to use Project UPLIFT. Developed as a means to explain the adoption of new technologies or ideas, DOI postulates that an innovation – an "idea, practice, or object that is perceived as new by an individual" – will be more readily adopted if certain conditions are met.[14] The perceived characteristics of the innovation, in part, determine whether an individual is likely to adopt an innovation, and these characteristics include relative advantage, compatibility, complexity, trialability, and observability. This study measured relative advantage ("the degree to which an innovation is perceived as better than the idea it supersedes") and complexity ("the degree to which an innovation is perceived as difficult to understand and use")[14(p990)] of Project UPLIFT as predictors of intention to adopt the program. According to Rogers,[14]

innovations that are perceived as having greater relative advantage and less complexity will be adopted more rapidly than other innovations. The primary constructs of TAM are perceived usefulness and perceived ease of use. According to Davis,[16] complexity closely parallels perceived ease of use, and any technology that is perceived to be useful, as well as easier to use than other technologies, is more likely to be adopted.

When utilizing these models in tandem, the resultant conceptualization dictates that if an innovation – in this case, Project UPLIFT – is perceived to be advantageous over what already exists (e.g., antidepressant medication and other types of therapy or counseling), useful, and easy to use, then individuals will indicate higher intentions to use that innovation. Consequently, the individual will adopt and use that innovation more readily. The findings of this study clearly confirm this hypothesis and support prior findings that illustrate the applicability of TAM to the appraisal of user acceptance of mental health programs. A recent study[87] conducted among HIV-positive individuals experiencing depressive symptoms applied a modified version of TAM to characterize user acceptance of the Tailored Interventions for Management of Depressive Symptoms (TIDES) program; perceived usefulness and perceived ease of use were both positively correlated with behavioral intention to use HIV TIDES. Mitchell and Gordon[75] identified numerous perceived characteristics of using a computer-based CBT program (CCBT) that has gained popularity internationally, Beating the Blues. College students in the study most frequently cited privacy and accessibility as advantages. Although a clear theoretical framework for the study was not delineated and perceived advantages and disadvantages were not used to predict likelihood of use, the study does validate the necessity to explore the perceptions college students have about new mental health programs.

b. Limitations

There are several limitations of this study to be considered when interpreting the results. First and foremost, generalizability to all of Emory University and other institutions of higher education is limited because of the characteristics of the sample. The 1,559 students who responded to invitations and actually completed the web-based survey comprised only 12% of the population of Emory students, and differed in demographic characteristics (Table 1). Responses obtained were not weighted based on available administrative data, and are unlikely to reflect the full range of experiences and opinions of all students currently enrolled at Emory. An overwhelming percentage of respondents were female, yet men and women make up roughly equivalent proportions of the student population at Emory. The overrepresentation of White students does mirror the racial and ethnic make-up of Emory University, but the results presented here may not apply to more diverse academic institutions. Emory University is unique in that the concept of mindfulness is not a foreign concept to the student body – His Holiness the XIV Dalai Lama serves as Presidential Distinguished Professor and numerous faculty members are currently conducting studies pertaining to mindfulness. Consequently, the willingness of Emory students to utilize a mindfulness-based program is likely to be skewed in a positive direction.

Secondly, the methods followed in conducting this study may have impacted the results. Due to constraints on time and resources, the perception scale developed for the study was not able to be pilot tested. Though it was reviewed by experts, further analysis of the validity of the scale would have helped ensure that the items were actually measuring the intended constructs. Data collection relied entirely upon self-report measures and the willingness of students to voluntarily provide responses. Recall and response bias may have unduly influenced some of the data collected, and conclusions should be drawn with a certain amount of caution. The cross-sectional design of this study constitutes yet another

limitation. Significant differences in depressive symptoms between students who had and had not received mental health treatment within the past year, as well as between students who were and were not receiving treatment at the time of the study were identified, but causal statements cannot be made in assessing whether students did not receive any treatment within the past year because they were experiencing very mild depressive symptoms. Similarly, one cannot infer that students who reported significantly higher depressive symptoms on the PHQ-9 did so solely because they had not seen a therapist or counselor within the past year.

Finally, not all constructs from the Diffusion of Innovations model and the Technology Acceptance Model were measured. Perceived need for mental health services is likely to have influenced students' perceptions of Project UPLIFT, but for the sake of feasibility and simplicity of the study, this was not assessed. Behavioral intention to use Project UPLIFT can be viewed as a proxy to actual program use,[15] despite the fact that students were not able to access and utilize Project UPLIFT during the current study.

c. Implications

Despite the limitations, this study does have implications for public health practice and future research. The literature has clearly demonstrated that students are negatively affected by depression, particularly when it comes to academic performance.[3, 5] Furthermore, symptoms of depression often persist over time within this population[11] and are associated not only with other mental health conditions, but with potentially fatal behaviors such as self-harm, substance abuse, and suicidal ideation.[6-9, 79, 80] As a result, surveillance of mental health problems on college and university campuses should be conducted on an ongoing basis. This study also showed that background characteristics and perceptions of mental treatment(s) determine students' intention to access and use services. Colleges should

become more cognizant of students' perceptions of treatment in light of their mental health needs, whether these needs are perceived by students as such, and other factors that influence help-seeking behaviors on campus. In order to adequately prevent, detect, and treat mental health problems among this population, mental health professionals and administrators at academic institutions need to develop and implement performance-monitoring plans for student counseling service centers, in addition to coming up with plans to regularly evaluate whether the services offered are meeting the current needs of students. Administrators need to assess whether students are aware of the services offered on campus as well as determine whether novel mental health programs may be of benefit to students.

d. Future Research

Future research should focus on developing further knowledge in a number of key areas. There is a paucity of theory-based research examining the perceptions that college students have about mental health treatment modalities, and how the experience of depression impacts their perceptions and subsequent use of mental health services. Studies conducted on this topic will undoubtedly benefit providers as they seek to incorporate emerging mental health programs into their repertoire of services. Identifying, accessing, and studying more diverse samples of college students is also important. Available evidence has demonstrated differences in preference and utilization of various treatment options across gender, race, socioeconomic status, and many other socio-demographic characteristics. The current study was quantitative in nature, as were several other studies referenced throughout the discussion. Incorporating qualitative research methods may provide a greater depth of understanding of the perceptions and motivations college students have to use new preventive and treatment services than quantitative methods alone. There is also a dearth of evidence attesting to the efficacy of CBT interventions in general and mindfulness-based

CBT interventions in particular, among college students. Efficacy studies should be conducted concurrently with studies examining perceptions and behavioral intention to use such programs, as it would be futile to determine that students are open to utilizing these services without knowing whether they are effective for treating and preventing depression in this population. Depression is not the only mental health problem facing modern college students, and so future research should also examine the efficacy of CBT and MBCT for ameliorating symptoms of other conditions, such as stress and anxiety. Finally, cost-effectiveness of administering these types of programs on college campuses – either face-to-face or over the phone or internet – should be examined.

V. Journal Article

Assessing perceptions of a mindfulness-based cognitive therapy (MBCT) program: Project UPLIFT

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ABSTRACT
Objective: To determine the nature of the associations between depression, perceptions of, and behavioral intention to use Project UPLIFT among college students. **Participants:** A convenience sample of undergraduate and graduate students at Emory University (N=1,559). **Methods:** Data were collected via web-based survey. Analyses were conducted on students' depressive symptoms, perceptions of Project UPLIFT, and intention to use the program. **Results:** Students who are more depressed and have more favorable perceptions of Project UPLIFT are significantly more likely to use the program. **Conclusions:** Students' experience of depression and perceptions they have toward mental health treatment influence their likelihood of utilizing services. Colleges should become more cognizant of students' perceptions of treatment in light of their needs, whether these needs are perceived by students as such, and other factors that influence help-seeking behaviors on campus.

Keywords: depression, perception, behavioral intention, students, mindfulness, MBCT, Project UPLIFT

Typically thought of as a time of great academic, social, and intellectual growth and development, the college years are also characterized by a great deal of transition and stress, which can result in the onset or recurrence of psychiatric disorders. A study based on the National Epidemiologic Study on Alcohol and Related Conditions found that nearly half of a sample of college students met criteria for at least one psychiatric disorder, as well as a high prevalence of alcohol use, and personality, mood, and anxiety disorders.[6] Though mental health varies across some factors (e.g., gender, socioeconomic status, level of study), it is

clear that mental health problems have been increasing in prevalence among this population.[7]

Depression, in particular, is a significant problem in the college population. Recent data[8] demonstrated that approximately 16% of undergraduates and 13% of graduate students met criteria for any depressive or anxiety disorder. Others[7] have shown that as many as 17% of students screened positive for depression according to the Patient Health Questionnaire-9 (PHQ-9) – this includes 9% of students who screened positive for major depression. Unfortunately, a large percentage of college-aged individuals who suffer from some behavioral or mental health disorder either never seek treatment or do not adhere to prescribed treatment regimens if they do seek help.[6, 9-11] A variety of barriers to service utilization have been identified, including attitudes and knowledge about services.[10] Mental disorders often negatively impact educational, social, and economic outcomes. Given this, the increase in prevalence of mental health problems, and that fewer than half of students who suffer from mental ill-health seek out treatment, it is pressing to develop alternative interventions geared toward the prevention, detection, and treatment of these conditions.[11]

In spite of the tremendous need to develop and implement innovative mental health programs on university campuses, little work has been done to examine the perceptions of students regarding specific mental health services. Project UPLIFT is a new, mindfulness-based cognitive therapy (MBCT) intervention that exists in two forms: a treatment and a prevention curriculum. The goal of the program – depending upon whether the treatment or prevention curriculum is used – is either to reduce or avoid the experience of depressive symptoms.[12] The current study sought apply constructs from two distinct theoretical models to the assessment of college students' perceptions about Project UPLIFT, for treatment and prevention of depression.

The Diffusion of Innovations model (DOI) posits that the process by which an innovation – an "idea, practice, or object that is perceived as new by an individual" – is adopted is impacted by many variables, including the socio-economic characteristics of the individual, or "the decision-making unit," and the perceived characteristics of the innovation.[13, 14(p990)] DOI offers two constructs specific to the perceived characteristics of an innovation: relative advantage ("the degree to which an innovation is perceived as better than the idea it supersedes") and complexity ("the degree to which an innovation is perceived as difficult to understand and use").[14(p990)] According to Rogers,[13, 14] innovations that are perceived as having greater relative advantage and less complexity will be adopted more rapidly than other innovations. Derived from the Theory of Reasoned Action (TRA), **t**he Technology Acceptance Model (TAM) was developed to predict acceptance and use of new technologies.[15, 16] TRA posits that an individual's performance of a specified behavior is determined by his or her behavioral intention (BI) to perform that behavior, that BI is influenced, in part, by the individual's attitude regarding that behavior, and that the individual's attitudes will be determined by their beliefs about and evaluation of that behavior's consequences. TRA also asserts that any other determinants of an individual's behavior will exercise their influence indirectly; these "external variables" include characteristics of the individual, such as personality and cognitive style.[17, 18] Using TRA as a foundation, Davis identified several key variables that could be used to model the relationship between external factors and an individual's beliefs, attitudes, and intentions;[15] perceived usefulness - " the degree to which a person believes that using a particular system would enhance his or her job performance" - and perceived ease of use - "the degree to which a person believes that using a particular system would be free of effort" - constitute the core constructs of TAM.[16(p320)]

Utilizing the aforementioned constructs as a framework, the current study sought to elucidate the sentiments of college students regarding a mindfulness-based cognitive behavioral therapy (MBCT) intervention for depression, Project UPLIFT.[12] The primary hypotheses of the study were:

- **Hypothesis 1:** Students who exhibit higher depressive symptoms will be more likely to use Project UPLIFT than students exhibiting fewer (or no) depressive symptoms
- **Hypothesis 2:** Students who have more favorable perceptions about Project UPLIFT will be more inclined to use the program
- **Hypothesis 3:** Depressed students who have more favorable perceptions about Project UPLIFT will be more inclined to use it than students who are depressed but have less favorable perceptions about Project UPLIFT

METHODS

After receiving IRB approval, a list of email addresses for all current Emory University students was obtained from the Registrar's Office in February 2011. An introductory email message containing study information and a link to a web-based survey was sent to all Emory University students, with the exception of the PI - 13,015 in total. After the introductory email was sent out, a reminder email message was sent on a weekly basis until an adequate sample size was reached. Students were required to provide consent by checking the appropriate box on the first page of the survey after reading information about the study provided in an online consent form. Only students who met the inclusion criteria and provided informed consent were allowed to continue with the survey. After providing demographic information and completing items pertaining to past and current use of antidepressant medications, past and current use of psychotherapy or counseling services, prior diagnosis of depression, the PHQ-9,[76] and prior exposure to phone-based and internet-

based depression programs, participants were provided a detailed description of Project UPLIFT. Participants subsequently answered questions regarding their perceptions about the program. The estimated time required to complete the entire survey was 15 minutes. As an incentive, students were offered the option to be entered into a random drawing for one of twenty (1 of 20) Barnes & Noble e-gift cards valued at $15.

Data obtained via the web-based survey were analyzed using SPSS (PASW) 18. A number of statistical procedures were conducted in order to address the objective of the study. Descriptive statistics and frequencies were generated to determine the demographic characteristics of the sample. A reliability analysis was conducted to determine whether the perception scale was, in fact, a reliable instrument. In order to determine the proportion of participants that reported different levels of severity of depression, depression score was recoded such that scores fell into one of five categories: none (0-4), mild (5-9), moderate (10-14), moderately severe (15-19), or severe depression (20 or greater);[76] frequencies were subsequently generated for each category.

Depression scores were recoded so that students were classified as experiencing depression (score ≥5 on the PHQ-9) or not experiencing depression (score <5 on the PHQ-9), and an independent samples t-test was run to determine whether perception scores differed significantly in the absence or presence of depressive symptoms at the time of the study. ANOVA was utilized to assess whether the relationships between level of severity of depression and perception scores were significant. If a significant difference was found among the five groups, post hoc tests were used to determine exactly which groups differed significantly.

Pearson's r was used to examine the correlation between depression score and behavioral intention to use Project UPLIFT, and an independent samples t-test was run to

determine whether behavioral intention differed significantly in the absence or presence of depressive symptoms at the time of the study. ANOVA was utilized to assess whether the relationships between level of severity of depression and behavioral intention were significant. If a significant difference was found among the five groups, post hoc tests were used to determine exactly which groups differed significantly. Correlation between perception score and behavioral intention to use Project UPLIFT was also assessed using Pearson's r. Perception scores were recoded into three categories: low, or less favorable (0-25), moderately favorable (26-50), and high, or more favorable (51-76). Subsequently, a two-way ANOVA was used to determine whether an interaction existed between level of severity of depression and perceptions about Project UPLIFT, and how that interaction affected behavioral intention to use the program. After stratifying the sample by the severity of their symptoms (e.g., none, mild, moderate, moderately severe, severe), ANOVA was used to determine whether students' perceptions (e.g., low, moderate, high) about Project UPLIFT were associated with their likelihood of using the program. If a significant difference was found among the groups, post hoc tests were used to determine exactly which groups differed significantly. Alpha was set at 0.05 for all statistical tests.

RESULTS

A total of 1,559 individuals participated in the study. These participants were individuals who began and made it through the final page of the web-based survey. The mean age of the sample was approximately 24.2 (SD=5.8), and the majority of the sample (n=956; 61%) was between the ages of 18 and 24. The greatest frequencies of participants were female (n=1,126; 72%), graduate or professional students (n=817; 52%), currently enrolled in the Emory College (n=531; 34%), full-time students (n=1,465; 94%), single and never married (n=1,199; 77%), heterosexual (n=1,427; 92%), U.S. citizens (n=1,306; 84%),

and white (n=908; 62%). When asked to report their parents' annual income before taxes, the largest proportion of students indicated that their parents made $100,000 or more (n=577; 37%) and that their parents' income was "enough to make ends meet" (n=713; 46%). A comparison of various demographic variables among the study sample and Emory University is available in Table 1, and information on other demographic variables that are specific to the study sample is presented in Table 2.

The overall mean score on the PHQ-9 was 5.5 (SD=5.1), which corresponds to symptoms of mild depression;[76] scores ranged from 0 to 27, and nearly half (n=705; 45%) of the sample met criteria for mild to severe depression, according to students' self-reported experience of mental health problems on the PHQ-9 (Table 3). Twenty-seven percent of students (n=427) were mildly depressed, 11% (n=172) were moderately depressed, 5% of students (n=72) had symptoms indicative of moderately severe depression, and 2% (n=34) were severely depressed (Table 4).

The mean behavioral intention (BI) score was 2.4 (SD=1.2); scores ranged from 1 to 5. A significant, positive correlation between depression score and behavioral intention to use Project UPLIFT was observed ($r=.257$, $\alpha=.01$, $p<.001$). An independent samples t-test was run to determine whether behavioral intention to use Project UPLIFT differed between those with presence and absence of depressive symptoms. Students who were depressed reported significantly higher intention to use Project UPLIFT, assuming it became available at Emory University, than did students who were not depressed ($t=-9.57$, $df=1551$, $p<.001$).

A statistically significant difference in behavioral intention was observed across level of severity of depression ($F(4,1548)=26.37$, $p<.001$; Table 8). Tamhane's post hoc tests suggest that behavioral intention among students who reported no depressive symptoms (mean=2.10, SD=1.13) was significantly lower than that of students who were mildly

depressed (mean=2.56, SD=1.19, p<.001), moderately depressed (mean=2.87, SD=1.22, p<.001), experiencing moderately-severe depression (mean=2.81, SD=1.29, p<.001), and severely depressed (mean=2.97, SD=1.47, p=.016). Mildly depressed students had significantly higher BI scores than students who were not depressed (p<.001) and significantly lower intention to use Project UPLIFT than moderately depressed students (p=.046); no statistically significant difference in behavioral intention was found between mildly depressed students and students reporting both moderately-severe (p=.739) and severe depression (p=.708). Moderately depressed students had significantly higher BI scores than students who were not depressed (p<.001) and students who were mildly depressed (p=.046); no statistically significant difference in behavioral intention was found between moderately depressed students and students reporting both moderately-severe (p=1.00) and severe depression (p=1.00). Students experiencing moderately-severe depression had significantly higher BI scores than students who were not depressed (p<.001); no statistically significant difference in behavioral intention was found between students reporting moderately-severe depression and students reporting mild (p=.739), moderately-severe (p=1.00) and severe depression (p=1.00). Severely depressed students were significantly more likely to use Project UPLIFT than students who were not depressed (p=.016); no statistically significant difference in behavioral intention was found between severely students and those experiencing mild (p=.708), moderate (p=1.00) and moderately-severe depression (p=1.00).

The mean perception score for the sample was 30.0 (SD=9.8); scores ranged from 2 to 68. There was a significant positive correlation between perception score and behavioral intention to use Project UPLIFT (r=.518, α=.01, p<.001). Perception scores were recoded into three categories: low, or less favorable (0-25), moderately favorable (26-50), and high, or

more favorable (51-76). Subsequently, a two-way ANOVA was used to determine whether an interaction existed between level of severity of depression and perceptions about Project UPLIFT, and how that interaction affected behavioral intention to use the program. A significant main effect for level of severity of depression was observed ($F(4,1538)=6.68$, $p<.001$; Table 8), indicating that students who are more severely depressed are significantly more likely to use Project UPLIFT. The main effect for level of perception was significant as well ($F(2,1538)=88.53$), $p<.001$; Table 9), indicating that students who have more favorable perceptions of Project UPLIFT have a significantly higher intention to use the program. Bonferroni's post hoc tests suggest that students with a low perception of Project UPLIFT are significantly less likely to use the program than students with moderately favorable ($p<.001$) and high perceptions ($p<.001$). Furthermore, students with moderate perceptions of the program are significantly less likely to use Project UPLIFT than students with high perceptions ($p<.001$). The interaction effect was significant ($F(8,1538)=2.20$, $p=.025$; Table 10), indicating that students who are more depressed and have more favorable perceptions of Project UPLIFT are significantly more likely to use it than their counterparts.

After stratifying the sample by severity of depression, ANOVA was utilized to determine where differences in behavioral intention to use Project UPLIFT could be found across perception groups, in each depressive category. Among those who were not depressed, there was a significant difference in behavioral intention according to perception ($F(2,845)=72.36$, $p<.001$; Table 10). Tamhane's post-hoc tests revealed that students who had low perceptions of Project UPLIFT were significantly less likely to use the program than those who had moderately favorable ($p<.001$) and high perceptions of the program ($p=.001$). No statistically significant difference in behavioral intention was found between

students who had moderate perceptions of Project UPLIFT and those who had high perceptions of the program (p=.061).

Among those who were mildly depressed, there was a significant difference in behavioral intention according to perception ($F(2,424)=57.71$, $p<.001$; Table 10). Tamhane's post-hoc tests revealed that students who had low perceptions of Project UPLIFT were significantly less likely to use the program than those who had moderately favorable ($p<.001$) and high perceptions of the program ($p<.001$). Students who had moderate perceptions of the program were significantly less likely to use it than students who had high perceptions of Project UPLIFT ($p<.001$).

Among those who were moderately depressed, there was a significant difference in behavioral intention according to perception ($F(2,169)=36.21$, $p<.001$; Table 10). Tamhane's post-hoc tests revealed that students who had low perceptions of Project UPLIFT were significantly less likely to use the program than those who had moderately favorable ($p<.001$) and high perceptions of the program ($p<.001$). Students who had moderate perceptions of the program were significantly less likely to use it than students who had high perceptions of Project UPLIFT ($p<.001$).

Among those with moderately severe depression, there was a significant difference in behavioral intention according to perception ($F(2,69)=21.70$, $p<.001$; Table 10). Bonferroni's post-hoc tests revealed that students who had low perceptions of Project UPLIFT were significantly less likely to use the program than those who had moderately favorable ($p<.001$) and high perceptions of the program ($p<.001$). No statistically significant difference in behavioral intention was found between students who had moderate perceptions of Project UPLIFT and those who had high perceptions of the program (p=.088).

Among those with severe depression, there was a significant difference in behavioral intention according to perception ($F(2,31)=6.03$, $p=.006$; Table 10). Tamhane's post-hoc tests revealed that students who had low perceptions of Project UPLIFT were significantly less likely to use the program than those who had moderately favorable perceptions of the program ($p=.002$). No statistically significant difference in behavioral intention was found between students who had high perceptions of Project UPLIFT and those who had low ($p=.959$) and moderate perceptions of the program ($p=.996$).

COMMENT

After reviewing the literature extensively, it appears that this is only the second study that has examined the perceptions college students have about a technology-based CBT program. The present study was the first research study conducted that evaluated the associations between demographic characteristics, depression, and perceptions and behavioral intention to utilize a technology-based MBCT program, Project UPLIFT, in a university setting. It is clear that the sample was not representative of Emory University as a whole, particularly when considering that the majority of participants were female or graduate students. The sample was more similar to the population regarding other demographic variables; however, even these proportions were not equivalent, which also indicates that the sample was not representative of the University at large.

Students' depression and perceptions about Project UPLIFT significantly influenced the likelihood that students would use the program if it were available. Higher depression scores were significantly associated with higher intention to use the program, as were the presence of depressive symptoms (as compared to the absence of depressive symptoms) and higher levels of severity of depression. Higher perception scores were significantly correlated

with a higher likelihood of program use. Commensurate with the main effect for level of severity of depression on behavioral intention, a significant main effect for level of perception about Project UPLIFT was also found. An interaction effect between level of severity of depression and perceptions about the program was observed as well; as severity of depression and favorability of perception increased, differences in likelihood of using Project UPLIFT became less significant.

All hypotheses were supported by the results of this study. Self-reported likelihood of using Project UPLIFT, if it were to become available at Emory University, was positively and significantly correlated with depression score. Additionally, students who were depressed reported significantly higher intentions to utilize Project UPLIFT than students who were not depressed. Across all levels of depression, a significant dose-response relationship to behavioral intention was found, suggesting that as level of severity of depression increases, behavioral intention to use Project UPLIFT increases significantly as well.

Perception scores were also positively and significantly correlated with self-reported likelihood of using Project UPLIFT. Main effects for level of depression and level of perception about the program, in addition to a significant interaction effect between the two variables – as demonstrated by two-way ANOVA – further supported the hypotheses of this study. Students who had the least favorable perceptions were significantly less likely to use the program than the other groups, and both subsequent groups had significantly higher behavioral intentions toward program use. Subsequent analyses conducted after stratifying the sample by depression severity category sought to characterize the nature of the interaction effect across all levels of depression. Students who were not depressed and had the least favorable perceptions about Project UPLIFT were significantly less likely to use the

program than all students who were not depressed but had more favorable perceptions. Significant differences in BI score between all three perception categories did, in fact, hold for students who were mildly and moderately depressed. For moderately- severe and severe depression, a significant difference in BI score was found among levels of perception, however, as the level of severity of depression increased, the number of groups that significantly differed from one another decreased. This is most likely due to the decreasing number of students who were experiencing more severe depressive symptoms at the time of the study. Perhaps, having a larger proportion of students in these depressive categories would provide the statistical power necessary to demonstrate the same tendency found among students with less severe depressive symptoms.

The DOI model and TAM can more than adequately explain the finding that more favorable perceptions are significantly associated with higher intention to use Project UPLIFT. Developed as a means to explain the adoption of new technologies or ideas, DOI postulates that an innovation – an "idea, practice, or object that is perceived as new by an individual" – will be more readily adopted if certain conditions are met.[14] The perceived characteristics of the innovation, in part, determine whether an individual is likely to adopt an innovation, and these characteristics include relative advantage, compatibility, complexity, trialability, and observability. This study measured relative advantage ("the degree to which an innovation is perceived as better than the idea it supersedes") and complexity ("the degree to which an innovation is perceived as difficult to understand and use")[14(p990)] of Project UPLIFT as predictors of intention to adopt the program. According to Rogers,[14] innovations that are perceived as having greater relative advantage and less complexity will be adopted more rapidly than other innovations. The primary constructs of TAM are perceived usefulness and perceived ease of use. According to Davis,[16] complexity closely

parallels perceived ease of use, and any technology that is perceived to be useful, as well as easier to use than other technologies, is more likely to be adopted.

When utilizing these models in tandem, the resultant conceptualization dictates that if an innovation – in this case, Project UPLIFT – is perceived to be advantageous over what already exists (e.g., antidepressant medication and other types of therapy or counseling), useful, and easy to use, then individuals will indicate higher intentions to use that innovation. Consequently, the individual will adopt and use that innovation more readily. The findings of this study clearly confirm this hypothesis and support prior findings that illustrate the applicability of TAM to the appraisal of user acceptance of mental health programs. A recent study[87] conducted among HIV-positive individuals experiencing depressive symptoms applied a modified version of TAM to characterize user acceptance of the Tailored Interventions for Management of Depressive Symptoms (TIDES) program; perceived usefulness and perceived ease of use were both positively correlated with behavioral intention to use HIV TIDES. Mitchell and Gordon[75] identified numerous perceived characteristics of using a computer-based CBT program (CCBT) that has gained popularity internationally, Beating the Blues. College students in the study most frequently cited privacy and accessibility as advantages. Although a clear theoretical framework for the study was not delineated and perceived advantages and disadvantages were not used to predict likelihood of use, the study does validate the necessity to explore the perceptions college students have about new mental health programs.

Limitations

There are several limitations of this study to be considered when interpreting the results. First and foremost, generalizability to all of Emory University and other institutions of higher education is limited because of the characteristics of the sample. The 1,559

students who responded to invitations and actually completed the web-based survey comprised only 12% of the population of Emory students, and differed in demographic characteristics (Table 1). Responses obtained are unlikely to reflect the full range of experiences and opinions of all students currently enrolled at Emory. An overwhelming percentage of respondents were female, yet men and women make up roughly equivalent proportions of the student population at Emory. The overrepresentation of White students does mirror the racial and ethnic make-up of Emory University, but the results presented here may not apply to more diverse academic institutions. Emory University is unique in that the concept of mindfulness is not a foreign concept to the student body – His Holiness the XIV Dalai Lama serves as Presidential Distinguished Professor and numerous faculty members are currently conducting studies pertaining to mindfulness. Consequently, the willingness of Emory students to utilize a mindfulness-based program is likely to be skewed in a positive direction.

Secondly, the methods followed in conducting may have impacted the results. Data collection relied entirely upon self-report measures and the willingness of students to voluntarily provide responses. Recall and response bias may have unduly influenced some of the data collected, and conclusions should be drawn with a certain amount of caution. The cross-sectional design of this study constitutes yet another limitation.

Conclusions

Future research should focus on developing further knowledge in a number of key areas. There is a paucity of theory-based research examining the perceptions that college students have about mental health treatment modalities, and how the experience of depression impacts their perceptions and subsequent use of mental health services. Studies conducted on this topic will undoubtedly benefit providers as they seek to incorporate

emerging mental health programs into their repertoire of services. Identifying, accessing, and studying more diverse samples of college students is also important. Available evidence has demonstrated differences in preference and utilization of various treatment options across gender, race, socioeconomic status, and many other socio-demographic characteristics. The current study was quantitative in nature, as were several other studies referenced throughout the discussion. Incorporating qualitative research methods may provide a greater depth of understanding of the perceptions and motivations college students have to use new preventive and treatment services than quantitative methods alone. There is also a dearth of evidence attesting to the efficacy of CBT interventions in general and mindfulness-based CBT interventions in particular, among college students. Efficacy studies should be conducted concurrently with studies examining perceptions and behavioral intention to use such programs, as it would be futile to determine that students are open to utilizing these services without knowing whether they are effective for treating and preventing depression in this population. Depression is not the only mental health problem facing modern college students, and so future research should also examine the efficacy of CBT and MBCT for ameliorating symptoms of other conditions, such as stress and anxiety. Finally, cost-effectiveness of administering these types of programs on college campuses – either face-to-face or over the phone or internet – should be examined.

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VII. Tables

Table 1. Sample characteristics at the time of the study, as compared to the population

Characteristic	Study Sample	Emory University
Total N	1,559	13,016
Gender		
Male	420 (27%)	5830 (45%)
Female	1126 (72%)	7185 (55%)
Level		
Undergraduate	728 (47%)	7068 (54%)
Graduate	817 (52%)	5948 (46%)
Enrollment		
Full time	1465 (94%)	11857 (91%)
Part time	81 (5%)	1159 (9%)
Race		
Asian	358 (23%)	2157 (17%)
Black/African American	125 (8%)	1368 (11%)
Hispanic	76 (5%)	462 (4%)
Native American/American Indian	3 (0.2%)	32 (0.2%)
Native Hawaiian/Pacific Islander	1 (0.06%)	-
White/Caucasian	908 (58%)	6085 (47%)
Multiracial	45 (3%)	-
Other/Unknown	26 (2%)	2912 (22%)
Nationality		
U.S. Citizen	1306 (84%)	11375 (87%)
Non-U.S. Citizen/International	243 (16%)	1641 (13%)

Table 2. Sample characteristics at the time of the study

Characteristic	N (%)
Total N	1,559 (100%)
Age	
Mean (SD)	24.2 (5.8)
Range	18-61
18-24	956 (61%)
25+	588 (38%)
School	
Business	105 (7%)
Emory College	531 (34%)
Laney	288 (19%)
Law	80 (5%)
Medicine	79 (5%)
Nursing	48 (3%)
Oxford College	124 (8%)
Public Health	249 (16%)
Theology	45 (3%)
Relationship status	
Single, never married	1199 (77%)
Domestic partnership	68 (4%)
Married	213 (14%)
Separated	4 (0.3%)
Divorced	17 (1%)
Widowed	0 (0%)
Other	50 (3%)
Sexual orientation	
Heterosexual	1427 (92%)
Gay/Lesbian/Queer	49 (3%)
Bisexual	57 (4%)
Other	12 (0.8%)
Parental income (I)	
$0-$24,999	168 (11%)
$25,000-$49,999	234 (15%)
$50,000-$74,999	290 (19%)
$75,000-$99,999	227 (15%)
$100,000 or more	577 (37%)
Parental income (II)	
Not enough to make ends meet	170 (11%)
Enough to make ends meet	713 (46%)
More than enough to make ends meet	643 (41%)

Table 3. Prevalence of mental health problems and treatment use within the sample

Treatment modality	Yes (%)	No (%)
Antidepressant use within the past year	230 (15%)	1325 (85%)
Currently taking an antidepressant	184 (12%)	1367 (88%)
Therapy or counseling within the past year	411 (26%)	1135 (73%)
Currently in therapy or counseling	224 (14%)	1320 (85%)
Diagnosed with depression within the past year	148 (10%)	1400 (90%)
Currently meet criteria for depression (PHQ-9 score ≥5)	705 (45%)	850 (55%)

Table 4. Prevalence of depressive symptoms within the sample, as indicated by PHQ-9 score

Depression Severity	N (%)
No depression (PHQ-9 score <5)	850 (55%)
Mild depression (PHQ-9 score 5-9)	427 (27%)
Moderate depression (PHQ-9 score 10-14)	172 (11%)
Moderately severe depression (PHQ-9 score 15-20)	72 (5%)
Severe depression (PHQ-9 score ≥20)	34 (2%)

Table 5. Self-reported level of difficulty depressive symptoms caused within the past two weeks

Level of Difficulty	N (%)
Not difficult at all	565 (36%)
Somewhat difficult	678 (44%)
Very difficult	113 (7%)
Extremely difficult	32 (2%)

Table 6. Regression model for depression score by socio-demographic variables*

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	13.322	17.583		.758	.449
Law	-2.371	.926	-.101	-2.561	.011
Oxford	-1.052	.495	-.057	-2.125	.034
Not enough	-1.090	.454	-.068	-2.401	.016
More than enough	1.062	.332	.102	3.200	.001
Have you taken an antidepressant within the past year (for example: Celexa, Prozac, Wellbutrin, Zoloft)?	-3.612	.770	-.252	-4.692	.000
Are you currently taking an antidepressant?	2.390	.819	.151	2.918	.004
Have you seen a therapist or counselor within the past year?	-.972	.413	-.084	-2.353	.019
Have you been diagnosed with depression by a doctor within the past year?	-3.115	.601	-.180	-5.180	.000

* Only variables that significantly predicted depression are listed

Table 7. Regression model for perception score by socio-demographic variables*

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	130.983	36.057		3.633	.000
Nursing	-7.085	1.759	-.126	-4.029	.000
75,000	-1.826	.826	-.067	-2.209	.027
Not enough	-2.117	.932	-.069	-2.272	.023
AA	-2.817	.983	-.080	-2.870	.004
Depression Score	.131	.056	.069	2.356	.019

*Only variables that significantly predicted perception are listed

Table 8. Association between level of severity of depression and behavioral intention to use Project UPLIFT*

Depression Category					F	df	p
None (group 1)	Mild (group 2)	Moderate (group 2)	Moderately-severe (group 3)	Severe (group 5)			
$2.10\pm1.13^{2-5}$	$2.56\pm1.19^{1,3}$	$2.87\pm1.22^{1,2}$	2.81 ± 1.29^{1}	2.97 ± 1.47^{1}	26.37	4, 1548	<.001

*The superscript numbers 1, 2, 3, 4, and 5 in each cell refer to groups that differ significantly from each other; p=.05

Table 9. Association between perception of and behavioral intention to use Project UPLIFT*

Perception Category			F	df	p
Low (group 1)	Moderate (group 2)	High (group 3)			
$1.64\pm0.84^{2,3}$	$2.67\pm1.20^{1,3}$	$3.85\pm1.13^{1,2}$	185.14	2, 1551	<.001

*The superscript numbers 1, 2, and 3 in each cell refer to groups that differ significantly from each other; p=.05

Table 10. Association between level of depression, perception of, and behavioral intention to use Project UPLIFT*

	Perception Category				F	df	p
	Low (group 1)	Moderate (group 2)	High (group 3)	Total			
Depression Category							
None (group A)	1.52±0.80[2,3]	2.38±1.16[1]	3.31±1.25[1]	2.10±1.13[B,C,D,E]	72.36	2, 845	<.001
Mild (group B)	1.75±0.84[2,3]	2.87±1.15[1,3]	4.14±0.38[1,2]	2.56±1.19[A,C]	57.71	2, 424	<.001
Moderate (group C)	1.85±0.92[2,3]	3.16±1.09[1,3]	4.38±0.52[1,2]	2.87±1.22[A,B]	36.21	2, 169	<.001
Moderately-severe (group D)	1.90±0.90[2,3]	3.31±1.10[1]	4.50±1.00[1]	2.81±1.29[A]	21.70	2, 69	<.001
Severe (group E)	1.80±1.03[2]	3.50±1.26[1]	3.00±2.83	2.97±1.47[A]	6.03	2, 31	.006
All	1.64±0.84[2,3]	2.67±1.20[1,3]	3.85±1.13[1,2]	2.36±1.21	185.14	2, 1551	<.001

*The superscript numbers 1, 2, and 3 in each row refer to groups that differ significantly from each other; the superscript letters A, B, C, D, and E in each cell refer to groups that differ significantly from each other; p=.05

VIII. Appendices

Appendix A: Online Consent Form

Emory University Rollins School of Public Health
Consent to be a Research Subject

Title: Assessing perceptions of a mindfulness-based cognitive therapy (MBCT) program within a university population

Principal Investigator: Shannon J.L. Gatewood, MPH Candidate 2011

Funding Source(s): The Principal Investigator will cover any costs associated with this study.

Introduction
You are being asked to be in a research study. This form is designed to tell you everything you need to think about before you decide to consent (agree) to be in the study or not to be in the study. It is entirely your choice. If you decide to take part, you can change your mind later on and withdraw from the research study. The decision to join or not join the research study will not cause you to lose any benefits and will not affect your grades or graduation status in any way. You were chosen as a potential participant for this study because you are a student at Emory University; you must be at least 18 years old to complete the survey. Approximately 1,700 students are expected to participate in the study. Your participation will require 15 minutes to complete an online survey.

Purpose
The scientific purpose of this study is to look at how many Emory students show signs of depression and whether or not they are depressed affects their attitudes about a new mental health program that is designed to treat and prevent depression.

Procedures
A brief 15 minute survey has been posted online for students to complete at their discretion. The survey contains questions about social and demographic background (i.e., age, gender, racial/ethnic group, etc.), past and current use of mental health treatment (i.e., medication, psychotherapy or counseling), current experience of depressive symptoms, as well as descriptions of a new mental health program for depression, and questions measuring attitudes about the program. Participants must provide consent to participate before being allowed to continue with the survey. Once consent is given and the survey begins, participants should read each question or description carefully and choose the most accurate response to each question.

Risks and Discomforts
This study poses minimal risk to participants. Questions which pertain to mental health status may cause you to experience feelings of anxiety or discomfort while completing the

survey. If a question makes you uncomfortable and you prefer not to answer, you may choose to skip that item and proceed to the next question

Benefits and Compensation
This study is designed to learn more about the mental health needs of university students and what they think about a specific mental health program. There are no costs to you from being in this study. Taking part in this research study may not benefit you personally, but the study results may be used to help other people in the future. All students who participate in the study and receive email notifications about the study can elect to be entered into a random drawing for one of twenty (1 of 20) Barnes & Noble e-gift cards valued at $15 by clicking the appropriate link in the introductory and reminder emails or at the end of the survey – you do not have to complete the survey in order to be entered. The random drawing will take place after data collection is complete. Winners will receive notification and an electronic gift (e-gift) card delivered to their Emory University email address.

Confidentiality
A secure link has been set up for you to complete the survey so that all data will be encrypted. Your IP address will not be distributed and all data collected will be transmitted through a secure channel. A study number will be used on all study records. Your email address and other facts that might point to you will not be collected or appear when results from this study are presented or published. All electronic files will be password protected and stored on a password-protected flash drive.

Certain offices and people other than the researchers may look at your study records, but the records will not include any information that can identify you. Government agencies and Emory employees overseeing proper study conduct may look at your study records. These offices include the Emory Institutional Review Board, the Emory Office of Research Compliance, and the Office for Human Research Protections. Emory will keep any research records we produce private to the extent we are required to do so by law. Study records can be opened by court order or produced in response to a subpoena or a request for production of documents unless a Certificate of Confidentiality is in place for this study.

Withdrawal from the Study
Your participation is completely voluntary. You have the right to quit the survey at any time without penalty. This decision will not in any way affect your current or future care/services or any other benefits to which you are otherwise entitled. If you choose to exit the survey before you complete it, you will be considered withdrawn from the study.

Questions
Contact the Principal Investigator, Shannon Gatewood at 410-746-7397 or uplift.research@gmail.com

- if you have any questions about this study or your part in it, or
- if you have questions, concerns or complaints about the research

If you have questions about your rights as a research subject or if you have questions, concerns or complaints about the research, you may contact the Emory Institutional Review Board at 404-712-0720 or 877-503-9797 or irb@emory.edu.

Consent

By giving consent, you acknowledge that you have read and understood the expectations, risks, benefits and rights associated with participating in this study. You will not give up any of your legal rights if you continue with the survey. Please respond to the questions below:

Are you at least 18 years old?*	□Yes □No
Are you currently enrolled at Emory University (either full or part time)?*	□Yes □No
Do you consent to taking this survey?*	□Yes □No

*Required question

Appendix B: Survey Instrument

Thank you for your willingness to participate in this project! This survey should take no more than 15 minutes to complete. Your participation is completely voluntary and you are free to skip any question(s) you choose. Please answer each question to the best of your ability. To begin, please provide some background information about yourself:

1. What is your age (in years)? _____

2. What is your gender? (Please select one)
   - □ Male
   - □ Female
   - □ Transgender
   - □ Other, please specify: _____

3. What is your current level of study?
   - □ Undergraduate
   - □ Graduate (or professional)

4. What school are you attending? (**If you are in a dual degree program, please select the school where you are currently taking classes**)
   - □ Business
   - □ Emory College
   - □ Laney Graduate
   - □ Law
   - □ Medicine
   - □ Nursing
   - □ Oxford College
   - □ Public Health
   - □ Theology

5. What is your enrollment status?
   - □ Full time
   - □ Part time

6. What is your relationship status?
   - □ Single, never married
   - □ Domestic partnership
   - □ Married
   - □ Separated
   - □ Divorced
   - □ Widowed
   - □ Other, please specify:
     _____

7. What is your sexual orientation?
   - □ Heterosexual
   - □ Gay/lesbian/queer
   - □ Bisexual
   - □ Other, please specify: _____

8. What is your current level of annual household income before taxes?
   - □ $0 - $24,999
   - □ $25,000 - $49,999
   - □ $50,000 - $74,999
   - □ $75,000 - $99,999
   - □ $100,000 or more

9. Your current level of annual household income (before taxes) is:
   - □ Not enough to make ends meet
   - □ Enough to make ends meet
   - □ More than enough to make ends meet

10. Which best describes your nationality of origin?
    - □ U.S. Citizen (Born in the U.S.)
    - □ International (Born in a country besides the U.S.)

11. What is your race? (Please select only one category)
    - □ American Indian or Alaska Native
    - □ Asian
    - □ Black/African American
    - □ Native Hawaiian or Other Pacific Islander
    - □ White/Caucasian
    - □ Multiracial
    - □ Other, please specify: _____

12. Are you Hispanic or Latino?
    □ Yes □ No

	Yes 1	No 2
13. Have you taken an antidepressant within the past year (for example: Celexa, Prozac, Wellbutrin, Zoloft)?	□	□
14. Are you currently taking an antidepressant?	□	□
15. Have you seen a therapist or counselor within the past year?	□	□
16. Are you currently seeing a therapist or counselor?	□	□
17. Have you been diagnosed with depression by a doctor within the past year?	□	□

18. Over the last two weeks, how often have you been bothered by any of the following problems?

(PHQ-9) Kroenke, K., Spitzer, R., & Williams, J. (2001). The PHQ-9: Validity of a brief depression severity measure. *Journal of General Internal Medicine, 16,* 606-613.	Not at all 0	Several days 1	More than half the days 2	Nearly every day 3
a) Little interest or pleasure in doing things	□	□	□	□
b) Feeling down, depressed, or hopeless	□	□	□	□
c) Trouble falling or staying asleep, or sleeping too much	□	□	□	□
d) Feeling tired or having little energy	□	□	□	□
e) Poor appetite or overeating	□	□	□	□
f) Feeling bad about yourself – or that you are a failure or have let yourself or your family down	□	□	□	□
g) Trouble concentrating on things, such as reading the newspaper or watching television	□	□	□	□
h) Moving or speaking so slowly that other people could have noticed. Or the opposite – being so fidgety or restless that you have been moving around a lot more than usual	□	□	□	□
i) Thoughts that you would be better off dead, or of hurting yourself in some way	□	□	□	□

19. If you checked off any problems, how difficult have these problems made it for you to do your work, take care of things at home, or get along with other people? (**If you didn't check off any problems, please proceed to the next question**)
    - □ Not difficult at all
    - □ Somewhat difficult
    - □ Very difficult
    - □ Extremely difficult

Have you ever…	Yes 1	No 2
20. participated in a depression program that was offered **over the phone**?	□	□
21. known anyone who has participated in a depression program that was offered over the phone?	□	□
22. participated in a depression program that was offered **over the internet**?	□	□
23. known anyone who has participated in a depression program that was offered over the internet?	□	□

Are you familiar with…	Yes 1	No 2
24. cognitive behavioral therapy (CBT)?	□	□
25. the practice of mindfulness?	□	□
26. Project UPLIFT?	□	□

Next, please take a few minutes to carefully read excerpts about a new mental health program and answer the questions that follow.

Project UPLIFT stands for **U**sing **P**ractice and **L**earning to **I**ncrease **F**avorable **T**houghts. The program can be used to either prevent or treat depression and is designed for delivery to groups of six to eight people by telephone or internet. The curriculum uses mindfulness-based cognitive therapy (MBCT) for depression, a specific form of therapy designed to get people to identify and change negative thoughts and patterns of thinking so they can avoid developing negative mood. It includes modules for eight sessions to be delivered weekly as follows: (1) Monitoring Thoughts, (2) Challenging and Changing Thoughts, (3) Coping and Relaxing, (4) Attention and Mindfulness, (5) The Calm Present, (6) Thoughts as Changeable, Thoughts as Impermanent, (7) Focus on Pleasure and the Importance of Reinforcement, and (8) Preventing Relapse and Giving Thanks.

Project UPLIFT…	True 1	False 2
27. is a program for depression	□	□
28. can be used to prevent or treat depression	□	□
29. includes ten (10) weekly sessions	□	□

Participation in the sessions involves skills practice, discussion, and group exercises based on the session's main topics. CBT-related topics include thought monitoring, identifying distortions in thought patterns, self-esteem, problem identification, goal setting, and identifying supports. Relaxation exercises are also used for coping and to facilitate awareness of the body. Mindfulness activities include paying attention to breath, sights, and sounds and other meditations. Participants practice their skills between sessions through homework assignments such as monitoring thoughts, changing thoughts, and practicing relaxation exercises, mediation exercises and mindfulness. The program is designed to guide participants from noticing, challenging, and changing thoughts (CBT components) to staying in the present moment with acceptance and nonreactivity to those thoughts (mindfulness components).

Project UPLIFT…	True 1	False 2
30. involves skills practice, discussion, and group exercises	□	□
31. does not involve homework assignments	□	□
32. has cognitive behavioral therapy (CBT) and mindfulness components	□	□

As mentioned, Project UPLIFT is designed for delivery to groups of six to eight people by telephone or internet. The telephone version is comprised of eight hour-long sessions, each including check-in, instruction, skill building, and discussion, with homework assignments between sessions. A toll-free conference call is set up for each telephone session. The internet version is conducted through Blackboard and contains the same elements: check-in, video instruction, skill building, a discussion board, and homework between sessions. Instruction focuses on increasing knowledge about depression, cognitive behavioral therapy (CBT), mindfulness, and skills related to CBT and mindfulness. Both the phone and internet versions of the program have been shown to significantly decrease depression in participants (Thompson, et al., 2010*).

Project UPLIFT…	True 1	False 2
33. is delivered one-on-one	□	□
34. has two versions – phone and internet	□	□
35. can decrease depression in people who use either version	□	□

* Description taken from: Thompson, N.J., Walker, E.R., Obolensky, N., Winning, A., Barmon, C., DiIorio, C. & Compton, M.T. (2010). Distance delivery of mindfulness-based cognitive therapy for depression: Project UPLIFT. *Epilespy and Behavior, In Press, Available online 20 September 2010*.

Now, think about the PHONE VERSION of Project UPLIFT as you answer the following questions:

	Not at all 0	Moderately 1	Very 2	Extremely 3
36. How <u>useful</u> do you think the ***phone version*** would be?	□	□	□	□
37. How <u>easy to use</u> do you feel the ***phone version*** would be?	□	□	□	□

	Not at all 1	Somewhat less 2	Equally 3	Somewhat more 4	Much more 5
38.					
a) How <u>effective</u> do you think the ***phone version*** of Project UPLIFT would be relative to taking antidepressant medication?	□	□	□	□	□
b) How <u>effective</u> do you think the ***phone version*** of Project UPLIFT would be relative to receiving another kind of therapy or counseling?	□	□	□	□	□
39.					
a) How <u>beneficial</u> do you think the ***phone version*** of Project UPLIFT would be relative to taking antidepressant medication?	□	□	□	□	□
b) How <u>beneficial</u> do you think the ***phone version*** of Project UPLIFT would be relative to receiving another kind of therapy or counseling?	□	□	□	□	□

Now, think about the INTERNET VERSION of Project UPLIFT as you answer the following questions:

	Not at all 0	Moderately 1	Very 2	Extremely 3
40. How useful do you think the ***internet version*** would be?	□	□	□	□
41. How easy to use do you feel the ***internet version*** would be?	□	□	□	□

	Not at all 1	Somewhat less 2	Equally 3	Somewhat more 4	Much more 5
42.					
a) How effective do you think the ***internet version*** of Project UPLIFT would be relative to taking antidepressant medication?	□	□	□	□	□
b) How effective do you think the ***internet version*** of Project UPLIFT would be relative to receiving another kind of therapy or counseling?	□	□	□	□	□
43.					
a) How beneficial do you think the ***internet version*** of Project UPLIFT would be relative to taking antidepressant medication?	□	□	□	□	□
b) How beneficial do you think the ***internet version*** of Project UPLIFT would be relative to receiving another kind of therapy or counseling?	□	□	□	□	□

Finally, think about Project UPLIFT OVERALL as you answer the following questions:

	Yes 1	No 0
44. Do you believe this program would be worthwhile to **you**?	□	□
45. Do you believe this program would be worthwhile to **other students**?	□	□

	Not at all 0	Moderately 1	Very 2	Extremely 3
46. How helpful do you feel this program would be in terms of…	□	□	□	□
a) ***preventing you personally*** from developing depression?	□	□	□	□
b) ***treating you personally*** for depression?	□	□	□	□
47. How helpful do you feel this program would be in terms of…				
c) ***preventing other students*** from developing depression?	□	□	□	□
d) ***treating other students*** for depression?	□	□	□	□

	Definitely prefer using the **PHONE** 1	The **PHONE** version might be better 2	Equal preference 3	The **INTERNET** version might be better 4	Definitely prefer using the **INTERNET** 5
48. Which version of Project UPLIFT would **you** prefer to use?	□	□	□	□	□
49. Which version do you think **other students** would prefer to use?	□	□	□	□	□

	Very Unlikely 1	Unlikely 2	Neither 3	Likely 4	Very Likely 5
50. Assuming Project UPLIFT became available at Emory…					
a) how likely would you be to use it?	□	□	□	□	□
b) how likely do you think ***other students*** would be to use it?	□	□	□	□	□

You've reached the end of the survey!

If you'd like to be enrolled in a random drawing to win a Barnes & Noble e-gift card (valued at $15), please send an email from your Emory University email address to: uplift.research@gmail.com, with "Random Drawing Entry" in the subject line.

Thank you so much for your time! If you are having thoughts about suicide or harming yourself, or just need to talk to someone about how you're feeling, please take advantage of the following resources:

Emory University Student Counseling Center
Call 404-727-7450 to schedule an appointment or visit their website (http://studenthealth.emory.edu/cs/index.php) to find out more information about the services offered. Examples of services available at the Student Counseling Center include:
Individual/Group/Couples Counseling
Psychiatry
Stress Clinic

Georgia Crisis and Access Line
Call 1-800-715-4225 or visit their website (http://www.mygcal.com/) to find a provider.