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College Integrated Care: Effectiveness of the Use of a Modified Version of the Patient Health Questionnaire for Patients in a University Health Clinic

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COLLEGE INTEGRATED CARE:

EFFECTIVENESS OF THE USE OF A MODIFIED VERSION OF THE PATIENT HEALTH QUESTIONNAIRE FOR PATIENTS IN A UNIVERSITY HEALTH CLINIC

by

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Abstract

In primary medical care settings, problems with providing appropriate behavioral care led to development of the integrated care model providing behavioral services alongside medical services. The present study explored the potential need for this model at a Midwest university health center, by investigating how two behavioral questionnaires influenced providers' prescription of psychotropic medications and referrals for behavioral intervention. After random assignment to condition, 109 participants in the experimental condition completed the mental-health-oriented Patient Health Questionnaire and the college-adjustment-oriented College Health Questionnaire, and 91 control participants received treatment as usual. Results indicated significantly higher rates of discussion of behavioral problems and prescription of psychotropic medications (not behavioral referrals) for the experimental condition. Patients in the experimental condition and providers both indicated a desire to use the questionnaires in future visits. These findings suggest that university health services would be fertile ground for implementation of an integrated care model.

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Introduction

Despite their appearance as young and healthy, college students present with a wide variety and large number of mental and physical health problems (American College Health Association, 2005). Typically, student health concerns are treated by physicians and nurse practitioners in a university health clinic. When necessary, students are referred to the university's counseling center for psychological help. Research from the community primary care setting states that this method of treatment may not be the best way to reach all who need psychological care (Blount, 1998; Byrd, O'Donohue, & Cummings, 2005). Instead, an integrated care approach, with psychologists and physicians working together to treat patients, has been shown to be a cost-efficient approach to identifying and addressing psychological problems. The potential exists for integrated care to be beneficial in the college and university settings as well.

The following section details the breadth of health problems that are prevalent in the college population. Next is an explanation of the concept of integrated care and the rationale behind its success. The background information is followed by methodology for an exploration of the potential for integrated care in the college health care setting, results of the study, and a discussion of the importance of the findings.

Known Health Problems in College Demographic

Mental Health Problems

The prevalence of psychological problems ranks high among all health problems in the college and university settings. For example, depression (18.8%) and anxiety (11.5%) are ranked as the fourth and sixth most common health problems in the college population

(American College Health Association, 2005). These behavioral problems directly affect a student's ability to perform well in school. The American College Health Association's (2005) report of the top 10 reported health impediments to students' academic performance includes 7 problems that could be considered behavioral in origin: stress (32.0%, the highest rated), sleep difficulties (24.1%), concern for a troubled friend or family member (18.4%), relationship difficulties (15.8%), depression/anxiety/seasonal affective disorder (14.6%), death of a friend or family member (8.8%), and alcohol use (7.8%). Equally important is the fact that many psychological disorders first manifest themselves during the college years. A study of college students with psychiatric disorders found that 48.6% suffered the onset of their symptoms during their college enrollment (Megivern, Pellerito, & Mowbray, 2003).

Together, these studies indicate that psychological problems should command more attention in college health care. A closer look at the prevalence rates of mood, anxiety, substance abuse, and eating disorders has implications for physical and mental health care providers.

Mood disorders. Although depression is a common behavioral disorder on college campuses, relatively little data exist to differentiate specific depressive disorders. In general, studies of college depression elicit self-report regarding current or past depressed feelings, current or past treatment for depression, or having ever been diagnosed with depression, thus inviting a broad range of answers regarding depression. It is therefore not surprising that, overall, reported rates of depression have ranged from 5% to 15%. For example, responses to a questionnaire mailed to students at a small college found that 15% of students reported themselves to be or have been depressed since starting college (Oswalt & Finkelberg, 1995). Through a questionnaire regarding psychological symptoms over the previous two months,

12.6% of students reported themselves as depressed (Rosenthal & Schreiner, 2000). In a broad university survey, 9.7% of students reported themselves to have frequently felt depressed during the previous year (Sax, 1997). Additionally, significant differences emerged when comparing females' reported rates of depression (11.8%) to males' (7.2%) (Sax, 1997). Research using the University of Michigan Composite International Diagnostic Interview Short-Form found that the prevalence of major depressive disorders for the 15-19-year-old population is 5.3% (6.0% of females and 4.4% of males) and for the 20-24-year-old population is 9.4% (10.7% of females, 8.1% of males) (Haarasilta, Marttunen, Kaprio, & Aro, 2001). A study of psychological reasons for withdrawal from school found that approximately 50% of students who withdrew from school were found by the school's counseling center to have serious enough depressive symptoms to impair the student's ability to function in school (Meilman, Manley, Gaylor, & Turco, 1992). Together, these studies show that at least 1 in every 10 students is afflicted with some form of depression and that it plays a large role in withdrawals from school. This rate is similar to that of the National Institute of Mental Health's report that approximately 8% of the general population suffers from depressive disorders (Kessler, Chiu, Demler, & Walters, 2005).

Literature on college health suggests that bipolar disorder is highly prevalent in the college population. As in many parts of the college health literature, prevalence data for bipolar disorder are relatively sparse. However, it is known that the onset of bipolar disorder occurs between the ages of 15 and 19 for over 25% of those with the disorder and between the ages of 20 and 24 for another 15% with bipolar disorder (Kupfer et al., 2002). Therefore, over 40% of those with bipolar disorder suffer from its onset during adolescence and young

adulthood, which are the most common years of college attendance. Approximately 2.5% of the general population is reported to have bipolar disorder (Kessler et al. 2005).

A major cause of death among college students is suicide, which many link directly to mood disorders. The most powerful suicide-prevalence study among college students, the Big Ten Student Suicide Study (Silverman, Meyer, Sloane, Raffel, & Pratt, 1997), which explored suicide rates on all Big Ten University campuses from 1980 to 1990, determined the suicide rate to be approximately 75/100,000 and most common among students 20-24 years old (46.4% of suicides). Although factors related to being a college student may play a causal role in suicide, one study found that only 7% of students who attempted suicide actually attributed it to academic stressors (Bernard & Bernard, 1982). Instead, about 75% of the students who attempted suicide claimed social or family problems as the cause of their actions. However, the college years may constitute a particularly volatile time in students' social lives as they make a transition from living at home to living independently (Patrick, Grace, & Lovato, 1992). Although college per se may not be the cause of suicides, factors related to being a college student may play some part. Particularly alarming is that although over half of college students may have considered suicide and up to 10% state that they have attempted suicide, only 33% of those who have attempted suicide have sought medical care in response to their attempts (Meehan, Lamb, Saltzman, & O'Carroll, 1992). It appears from these studies that the college population is significantly at risk for suicide, making it an area of college mental health that deserves special attention. Additionally, suicidality appears to be a relatively underreported phenomenon, making it necessary for clinicians to be particularly vigilant in detecting those students who are in need of intervention.

Between 30 and 80% of students suffer from homesickness, according to a United Kingdom study (Willis, Stroebe, & Hewstone, 2003). Although many consider homesickness to be a normal part of the adjustment to college, it has been shown that homesick students are more prone to depression, anxiety, and academic problems, making homesickness a potential risk factor for mood disorders.

In summary, the mood disorders represent an area of concern for the college population's health care and mental health care providers. Concerns range from the high percentage of students with depressive symptoms to the risk of suicidal behavior. In consideration of the fact that these disorders may afflict over 10% of the student population, medical care providers and university officials should have the treatment of mood disorders at the top of their list of concerns. It appears, however, that mood disorders are not alone. Stress, anxiety, substance abuse, eating disorders, and physical health problems all have similar effects on the college population.

Stress and anxiety. Stress is credited by many to be the leading cause of all health problems in the United States. Between 60 and 90% of visits to healthcare professionals nationwide are due to stress-related symptoms (Grace, 1997). Collegiate students have a unique list of stressors, including high performance expectations, forming new interpersonal relationships, and transitioning from living with parents to living independently.

Students at Eastern Michigan University list an impressive number of stressors (Alschuler, Hoodin, Lynch, & Kuhl, 2005). On a campus where most students are taking a full credit load (12-16 credits), 12% of the students hold jobs that require over 40 hours per week. Another 25% of the students work between 20 and 40 hours per week. Taking this extreme work load into consideration, it is not surprising that 22.5% of the students scored in

the *moderate* or *severe* ranges on the Beck Depression Inventory-II and 20% of students scored at or above clinical levels of anxiety on the State-Trait Anxiety Inventory. This rate slightly exceeds the reported rate of 18% for the general population (Kessler et al., 2005).

The college years and their related transitional period cause particularly stressful situations for students. Not only do stress and anxiety often coexist with the aforementioned mood disorders, but college students and others often cope through substance use.

Substance use. An area of focus in college health research is alcohol and drug use. In fact, more than 1 in 10 students are documented to have substance-use disorders (Svanum & Zody, 2001), predominantly related to alcohol, followed by recreational drugs.

The major substance-abuse issue for college students has traditionally been alcohol consumption, leading some to call it the "drug of choice" (Charney, 1994, p. 31). The influential Monitoring the Future study (National Institute on Drug Abuse, 2004) found that 81.2% of college students had drunk alcohol within the previous year and 67.7% had drunk within the previous 30 days. One study reported that 26% of their sample qualified for an alcohol abuse or dependence diagnosis (Ross & Tisdall, 1994). Heavy episodic or binge drinking exceeds 40% (Grace, 1997) and may be as high as 53.9% (Sax, 1997). An alarming 27.7% of students reported drinking between five and eight drinks during their last drinking episode (American College Health Association, 2005). Binge drinking is particularly common in the athletic community (Vickers et al., 2004). Additionally, alcohol abusers are significantly more likely to abuse drugs, have psychosexual dysfunction, and meet criteria for panic and mania (Ross & Tisdall, 1994). Disturbingly, alcohol abusers are 25% more likely to have suicidal thoughts and twice as likely to act on those thoughts in comparison to nonabusers. Perhaps most alarming is the fact that 25% of students have driven after

drinking (Patrick et al., 1997). Dawson, Grant, Stinson, and Chou (2005) noted that all drinkers have increased risks of mood, anxiety, and personality disorders. The fact that such a high percentage of students report excessive and binge drinking, coupled with the psychological risk factors associated with such habits, makes alcohol abuse an important problem in the college population.

Relatively less research has been conducted on recreational drug use among college students. Annual marijuana use in college students has been estimated to be approximately 30% (Grace, 1997). The influential Monitoring the Future study (National Institute on Drug Abuse, 2004) agreed, stating that 33.3% of college students use marijuana annually. Sax (1997) noted that 33.8% of college students favor marijuana legalization, a number that nearly matches the rate of marijuana usage. More recently, the American College Health Association (2005) reported lower marijuana usage, noting that 19.8% of students had used marijuana in the previous month.

Annually, 36.2% of college students use illicit drugs, and 18.6% use a drug other than marijuana. Studies found that between 6 % (Grace, 1997) and 13.1% (American College Health Association, 2005) of students had used illicit drugs within the previous 30 days. The Monitoring the Future study agreed, stating that 9.1% of students had used a drug other than marijuana in the previous 30 days (National Institute on Drug Abuse, 2004).

Studies of smoking have shown that over 20% of smokers either begin in college or smoke more regularly in college (Naquin & Gilbert, 1996; Patrick, Covin, Fulop, Calfas, & Lovato, 1997). Over one third (36.7%) of students smoke cigarettes annually; 24.3% smoked within the previous 30 days, and 13.8% smoked daily.

In summary, the substance-use studies reveal an alarmingly high rate of use and abuse of alcohol, marijuana, illicit drugs, and tobacco. Considering the potentially severe behavioral and physical consequences of such abuse, as well as the comorbidity with other psychiatric disorders (Kessler et al., 2005), this should be an area of concern for physical and behavioral specialists alike.

Eating disorders. College students are notorious for their difficulties with eating. College females are particularly predisposed to eating disorders (Kirk, Singh, & Getz, 2001). Eating disorders afflict 4% to 19% of female college students (Borgen & Corbin, 1987). More specifically, using the Eating Disorders Inventory to study college female athletes, Borgen and Corben found that 6% of nonathletes, 20% of athletes in sports that emphasize leanness, and 10% of all athletes were abnormally preoccupied with their weight, leading researchers to hypothesize that the social and physical demands of being a collegiate athletes pushes a higher number of females toward eating disorders. With an increasing percentage of females participating in collegiate athletics, this issue of higher eating-disorder rates should be of concern. Grace (1997) was careful to point out that although much of the research is on anorexia and bulimia, an additional focus for concern should be overeating. In the general population, the prevalence rates of both bulimia and anorexia are reported to be up to 4% for females. Binge eating has been reported to be 2-5% for Americans (Spitzer et al., 1993).

The American College Health Association (2005) noted that students seem particularly interested in losing weight. For example, 55.6% exercised, 33.7% dieted, 2.5% vomited, and 5.8% took diet pills as weight-loss remedies. It should be noted that in this

study, students were asked to note all of the activities they participate in, so some students may have contributed to as many as all four categories.

The trend toward a fixation on weight loss and thinness should concern healthcare providers. Specifically, eating disorders have high comorbidity with other mental and physical health problems. The presence of disordered eating should indicate to healthcare providers that an individual is under a high risk for health problems.

Physical Health Problems

College students visit their college or university's health center for a wide variety of reasons. Fingar (1989) reported that the highest percentage of students (29%) are diagnosed with acute upper respiratory infections; gynecological exams (13%) and symptoms or complaints (7%) are the next most common reasons for visits. The remaining diagnoses are each seen in less than 3% of the patients and include viral infections, dermatitis, joint and limb pain and sprains, abdominal pain and disorders, and superficial injuries. Eleven percent of the patients present with two or more problems.

The American College Health Association (2005) ranked allergies as the most common health problem (45.7% of students), followed closely by back pain (44.2%) and, then, sinus infection (26.9%). Other highly ranked health problems include strep throat, asthma, ear infections, and bronchitis. Infectious mononucleosis is found in 12 out of every 1000 college students per school year (Rimsza & Kirk, 2005). Patrick et al. (1992) noted the breadth of problems that commonly first appear within the 18-24-year-old age group, including: seizures, migraine headaches, asthma, Type I diabetes, arthritis, bowel disorders, and ulcers.

When one combines the lengthy list of physical problems with the previously described psychological problems, it becomes easy to see that college health care is a particularly complex field. As this study targeted students at Eastern Michigan University, it is important to compare how those students compare to students at other universities around the United States.

Health at Eastern Michigan University

The population for the present study, Eastern Michigan University (EMU) students, has as many health problems as students at universities all over the country, as indicated by the 2002 American College Health Association National College Health Assessment. The following data are from the Executive Summary, Fall 2002.

Per student report, during the previous school year, 19.4% experienced depression, 10.4% experienced anxiety disorders, 7.0% experienced seasonal affective disorder, 2.5% had bulimia, and 1.5% had anorexia. The rates of depression, anxiety, and seasonal affective disorder all exceed national college and university rates by 2-4%. Regarding substance use, EMU students engage in daily use of alcohol and cigarettes at a rate of almost 1.5 times the national collegiate average.

The most common medical problems reported by EMU students were back pain (43.9%), allergy problems (42.5%), sinus infection (28.7%), strep throat (14.9%) and asthma (11.6%). These rates are all similar to national averages. However, only 51.6% of Eastern Michigan University students described their health as very good or excellent, compared to the national average of 59.5%.

Summary on College Health

Students' physical health problems combine with their behavioral problems to present a complex puzzle of health problems that are brought to college health centers. The behavioral problems may exist independently of the medical problems being treated, predispose patients to medical problems, or exacerbate medical symptoms. However, it is not clear that student health care is carried out in a manner that best identifies the breadth of problems presented in this population.

Caring for Health Problems Through Integrated Care

Overview

Although the literature is mute on whether college students seek help for their psychological problems through the counseling centers or through their physicians, literature on the general population states that over 50% of patients with mental health problems seek care through their primary care providers (Blount, 1998; Strosahl, 1998; Byrd et al., 2005). Regardless of the physician's qualifications to treat the patient's problems, the physician is entrusted with the role of either treating the patient or making a referral to a specialist. Considering the obstacles inherent in any referral system, many patients (80% according to O'Donohue, Cummings, & Ferguson, 2003) never make it to a psychologist. That is why some have declared primary care as the *de facto* mental health care system (Strosahl, 2002; Robinson & Strosahl, 2000; Blount, 1998). To address behavioral problems in a medical setting, a method of care called *integrated care* has been developed in the last 10 years.

The term *integrated care*, which has evolved out of the biopsychosocial model, describes an interdisciplinary health care team that includes both behavioral and medical

clinicians. O'Donohue et al. (2003) stated that the three principal goals of integrated care are producing healthier patients, doing so with less or, at least, more efficient expenditures, and removing barriers to access by offering services that are both more convenient and carry less stigma. Additionally, integrated care is hypothesized to provide a method of care that better covers the wide variety of problems that patients bring to a medical facility. More specifically, when treating patients with unexplained complaints, psychologists are able to identify psychological origins in 75-80% of the cases (Blount, 1998). Although this model requires behavioral health care specialists and physicians to cooperate on a new system of care, a well-integrated program can be successful in providing better care for patients (Strosahl, 1996; Blount, 1998).

Integrated care is a derivative of the *consultation-liaison* model of psychiatric care, which is specifically the treatment of psychiatric disorders within medical settings (Byrd et al., 2005). Consultation-liaison psychiatry serves its patients by directly caring for patients through behavioral medicine, as well as by educating and consulting with primary care providers on the psychiatric disorders. However, integrated care differs from consultation-liaison psychiatry in a variety of ways (Byrd et al., 2005). Whereas psychiatrists carry out consultation-liaison psychiatry, integrated care involves psychologists. Integrated care is typically focused on the outpatient setting, whereas the consultation-liaison model was developed for hospital service. Finally, consultation-liaison psychiatry has more of an assessment focus, whereas integrated care is focused on treatment.

The integrated care model exemplifies the biospychosocial model in that it explains an interaction among the mind, body, and behavior (Robinson & Strosahl, 2000; Blount, 1998). The assumptions of this model dictate that many problems involve all three

categories to some degree, making it essential to have experts in mind, body, and behavior actively engaged in the treatment of patients within this model. This is a stark contrast to the mind-body dualism more prevalent in today's healthcare system.

Behavioral care through primary care providers. Mental health specialists and physicians alike are concerned with the care of patients and the improvement of treatment outcomes. Because many people's psychological problems often manifest through physical means, patients tend to seek out medical care as a first resort (Blount, 1998; Byrd et al., 2005). However, the medical field is more suited for biological care, resulting in a line of nonpsychological (i.e., medicinal) care, even for psychological problems. To provide psychological care, it is important to reach patients where they present with their problems--at the primary care setting (Blount, 1998).

Additionally, the stigma attached to visiting a psychologist keeps many from seeking psychological help (Maruish, 2000; Blount, 1998; Byrd et al., 2005). Patients who seek medical care are often unwilling to accept the fact that they need psychological care (Blount, 1998). This leads to situations such as that documented by Katon (1995), who found that 50-60% of depressed patients are treated by their primary care providers alone.

Other factors also contribute to patients' decisions to seek help through their primary care providers. Many patients must first visit a primary care provider as a result of the referral system required by their insurance plan. Although the physician may choose to refer the patient to a behavioral specialist, approximately 80% of patients never follow through with such referrals (O'Donohue et al., 2003). Integrating care could better facilitate the referral process. At minimum it would be beneficial to colocate the psychology clinic in the same facility as the medical clinic. Cummings (2003) noted that this is a successful first step

toward integration, as it allows for a direct handoff of the patient, ensuring that the patient sees the psychologist without passing through the referral process. Patient referral to an onsite behavioral specialist increases compliance with referrals to 90% (Strosahl, 1998).

When physicians choose to treat patients with behavioral problems without seeking the help of a behavioral specialist, treatment often takes the form of psychotropic medications. For example, physicians often treat depression with antidepressants (Robinson & Strosahl, 2000; Blount, 1998). Although evidence shows that medications are an effective treatment, Cummings (2003) argues that many patients receive improper dosages, in part because primary care physicians, who are not specialists in psychiatry, prescribe the medications (Cummings, 2002).

Additionally, the effectiveness of psychological treatment in comparison to the use of psychotropic medications has been supported through research. DeRubeis and Crits-Christoph's (1998) influential review revealed that cognitive therapy for depression is at least as good as the use of antidepressants in reducing depression but better than pharmacotherapy in relapse prevention. Behavior and interpersonal therapies were also found to be more efficacious than psychopharmacological treatments in the treatment of depression. In researching efficacious treatments for a wide variety of psychological problems, DeRubeis and Crits-Christoph found that there are efficacious psychological treatments for all of the psychological disorders that they investigated: major depressive disorder, generalized anxiety disorder, social phobia, obsessive-compulsive disorder, agoraphobia, panic disorder, posttraumatic stress disorder, schizophrenia, alcohol abuse-dependence, and substance abuse-dependence. To be labeled efficacious, these treatments must result in a faster reduction or remission of the problem than what would occur with the passage of time. Additionally, they

must outperform an alternative treatment. The success of these therapy techniques in treating their associated disorders highlights the importance of involving psychologists who can implement these efficacious therapies.

Understanding that a high proportion of patients seek medical care for their psychological problems and that the referral system from physicians to behavioral specialists is often unsuccessful necessitates a better system of patient access to behavioral care. Integrated care solves this problem by allowing psychologists to reach their patients in the place where they seek services (Byrd et al., 2005). Research on integrated care has shown this method to be successful as a means of improving both the quality of care and the cost-effectiveness of treating patients.

Improving the quality of care through integrated care. An important goal for primary care is to be able to intervene early, appropriately, and aggressively when addressing a patient's concerns (Strosahl, 1998). Cooperative care between mental health specialists and physicians has been shown to achieve this goal (Maruish, 2000; Robinson & Strosahl, 2000; Blount, 1998). Specifically, 74% of patients in an integrated care setting showed significant reduction in their presenting symptoms, whereas only about 44% had their symptoms reduced through a treatment-as-usual condition (Katon et al., 1995). Additionally, it is reasonable to expect as much as 85% improvement in the recognition of common behavioral problems when specialists are on site (Wilson, 2004). This research indicates that care improves from the combined efforts of physicians specializing in the physical aspects of care and mental health specialists treating the behavioral and psychosocial aspects.

Blount (1998) noted the importance of integrated care in the adherence to treatment plans, suggesting that patients engaged in behavioral health care may increase adherence to

their medical treatment. One study found adherence to medications improved from 50% to 75% when patients were treated through integrated care (Katon, 1995). Others have shown that behavioral therapy for depressed patients improves patients' use of coping strategies and adherence to the usage of medications (Robinson, 2003). Similarly, patients with chronic diseases can often be aided by help with disease management (O'Donohue et al., 2003). Disease-management groups, led by behavioral care providers, can provide treatment-adherence interventions, lifestyle-change programs, social support, stress management, education regarding the diseases, and treatment of psychological comorbidity.

Cost-offset benefits. In today's world of rising healthcare costs, it is in the interest of the healthcare community to explore ways to reduce costs. Medical costs have increased almost 2,000% since the 1960s, representing a 100% increase in its percentage of the Gross National Domestic Product (Chiles, Lambert, & Hatch, 2002). Considering that it is unethical to refuse treatment to an ill patient, we must focus on how to more efficiently provide treatment (Strosahl, 2002). Therefore, many studies on integrated care have focused on cost-offset – the monetary value of medical care costs reduced by engaging in integrated care (Kaplan & Groessel, 2002). Friedman et al. (1995) made a compelling argument for the variety of ways that behavioral health specialists can help to reduce costs. Specifically, this could occur through six pathways: an information and decision-support pathway, a psychophysiological pathway, a behavior-change pathway, a social support pathway, an undiagnosed psychiatric problem pathway, and a somatization pathway.

The information and decision-support pathway highlights the fact that many patients simply lack the knowledge to be able to self-manage their health problems, leading to a reliance on the advice of a physician. Simple self-care education can greatly reduce the

number of visits to physicians for minor illnesses because many medical patients lack the knowledge of how to care for ill family members. Vickery et al. (1983) estimated that for every $1 spent on education, $2.41 was saved in medical costs.

The psychophysiological pathway deals with the fact that stress places humans on high alert, wearing down the body (Friedman et al., 1995). Education in techniques of relaxation may allow people to control the wear and tear on their bodies, reducing their likelihood for illness. For example, the use of biofeedback techniques in a postsurgery wing of a hospital has been shown to reduce the length of hospital stays by an average of 1.5 days (Devine, 1992), thus saving approximately $10 in medical costs for every $1 spent in biofeedback training (Friedman et al., 1995).

The behavior-change pathway explicates that the reduction of harmful habits, such as drinking and smoking, greatly improves human health. Teaching people to change from using harmful substances, eating poorly, or leading a sedentary lifestyle has been shown to reduce costs. For example, a study focused on the improvement of senior citizen health habits cost $30 per person per year but reduced medical costs by an average of $164 per person in the first year (Fries, Bloch, Harrington, Richardson, & Beck, 1993).

The social support pathway operates under the premise that many patients have little or no social support. A study on the child-birthing process found that many women who choose to have Caesarean sections would give birth in a traditional manner if they had better social support (Kennell, Klaus, McGrath, Robertson, & Hinkley, 1991). The hiring of a person to provide emotional support has been found to reduce the need for C-sections by over 50% and, as a result, reduce a wide variety of hospital costs. The cost of hiring this type of person is $200, far less than the costs of the surgical procedure.

The undiagnosed psychological problem pathway is built on the premise that many patients with physical symptoms have undiagnosed behavioral problems, an issue of particular concern to psychologists. This is consistent with findings that a high percentage of symptoms (50-80%) presented in primary care have no identifiable medical cause (Chiles et al., 2002), suggesting that the presenting problem may be behavioral rather than medical in origin. Conversely, Spitzer, Kroenke, and Williams (1999) found that 48% of the patients identified with a behavioral problem had not been previously so diagnosed by their physician. Integrated care has been used to better identify and treat these behavioral problems. In one case, the treatment of behavioral problems was found to greatly decrease hospital stays, resulting in an average reduction in costs of $1,294 per patient over the course of hospitalization (Strain et al., 1991).

The somatization pathway highlights the fact that high utilizers are often psychologically distressed individuals. Patients who overutilize medical care, sometimes referred to by physicians as *thick chart patients*, are responsible for a high percentage of medical costs. Researchers have calculated that 20% of the population is responsible for approximately 80% of the medical costs (Cucciare & O'Donohue, 2003). Along these lines, Pallack, Cummings, Dorken, and Henke (1995) found that 15% of Medicaid patients were responsible for 80% of the medical costs. High utilizers are more likely to have not only chronic medical disorders, but psychological disorders as well (Spitzer at al., 1994). Specifically, high utilizers are more likely to suffer from depression. It should be no surprise that some of the most common symptoms seen by physicians, such as gastrointestinal problems and headaches, are also commonly seen in anxious and depressed patients (Maruish, 2000). A meta-analysis by Chiles et al. (2002) reported that 90% of the articles

reviewed on integrated care reported a reduction in utilization (effect size = .34) following psychological intervention. The reduction in utilization was calculated to represent 2.01 fewer days in the hospital, a savings of $1,758.75 per patient.

In the course of analyzing the costs of treatment for depressed patients, Katon et al. (1995) found a success rate of 74% for integrated care patients and 44% for the non-integrated care patients. The cost of treatment for integrated care patients was $1,337 per year, which was higher than the $850 cost for nonintegrated care. However, incorporating the costs of successful patients with the ongoing costs of unsuccessful patients, Katon et al. found that in the integrated care group, the cost per successful patient was $1,783, whereas it was $1,940 for the nonintegrated care group, yielding further evidence that integrated care options were more effective, at least for patients with major depressive disorder.

In the course of summarizing the cost-effectiveness data, Strosahl (2002) concluded that cost savings of 20-40% are not unrealistic for a well-designed integrated care model. Additionally, Chiles et al. (2002) suggested that the savings may be so great from integrated care that it has the potential to actually pay for itself.

Summary on integrated care. College students suffer from a wide variety of mental and physical health problems. Despite the problems they present, college students often only seek health care when their problems are at their worst. Recent research notes the importance of early intervention with psychological distress. National Comorbidity Survey project leader Ronald Kessler noted that it can take the better part of a decade for patients suffering from disorders like depression, generalized anxiety, phobias, and obsessive-compulsive disorder to seek help (Bailey, 2005). At the time these people enter treatment, the problems have often become severe. With that in mind, Kessler has become a proponent

of early intervention, treating psychological disorders at their mild levels before they become more severe. When considering the college population, Kessler's comments highlight the need for a system that helps to recognize psychological disturbance at its earliest presentation.

Understanding that integrated care has also been beneficial in the general population in regard to treatment outcomes and cost-effectiveness, it appears possible that integrated care could have similar results in the realm of college health. To better understand how integrated care might be used in a clinic, we turn now to a review of how integrated care works in the treatment of specific problems.

Specific Applications of Integrated Care

Integrated care has been shown to be useful in the identification and treatment of a variety of specific disorders. The descriptions below exemplify the benefits of using integrated care to better address many of the problems present in a college or university setting.

Mood disorders. Recent depression research suggests that the depressive disorders are caused and maintained by biological, psychological, and social factors (Callaghan & Gregg, 2005). However, a comprehensive model for treatment grounded in all three areas of concern is typically not the initial modality of treatment in primary care. The first line of treatment is often psychotropic medications, which have been shown to be less successful in maintaining treatment gains once treatment is concluded (Callaghan & Gregg). Original integrated care models focused on educating physicians regarding the depressive disorders. When that model failed, new models focused on a reorganization of the primary care practice

in an effort to better detect depressive symptoms. This, however, only increased detection but did not improve treatment outcome. The most successful model to date has been the full integration of psychologists into the medical treatment team. Treatment of depression through psychosocial intervention has been estimated to be $58 per patient for 8 weeks, which is one fifth the cost of treating the patients with psychotropic medications only (Callaghan & Gregg).

A more complicated assessment within mood disorders is the identification of suicidal patients. Suicidal thoughts are very common within the general population, yet relatively few individuals act on those thoughts (Lillis & Fruzetti, 2005). The best methods for assessing suicidality come through risk assessment and treatment-oriented assessment. It is particularly important to understand common risk factors for suicide, such as social, family, and age factors, as well as the presence of chronic pain, medical illness, psychiatric disorders, and substance abuse (Lillis & Fruzetti). The presence of such risk factors might be better assessed by a psychologist working within the medical team. For chronically suicidal patients, an interventive assessment is a better option. This method focuses on the reduction of risk factors, which can be done by a specifically trained physician or psychologist. Both forms of assessment allow an integrated care team to understand the gravity of an individual's suicidal ideation.

Anxiety disorders. Anxiety disorders are particularly difficult to detect in the medical setting because many anxious patients complain of the somatic symptoms that accompany anxiety disorders (Campbell-Sills, Grisham, & Brown, 2005). Although symptoms such as heart-racing, shortness of breath, and dizziness may represent a heart condition, they also appear in psychologically distressing situations. This is particularly true during panic

attacks, where the sudden onset of such symptoms may appear to be a heart attack. With the detection of anxiety's being the most problematic aspect of treating this disorder in primary care, the use of a quick screener, such as the Patient Health Questionnaire (PHQ), is an ideal aid for this problem (Campbell-Sills et al., 2005). Campbell-Sills et al. cited integration of a medical treatment team from multiple disciplines as a successful way to treat these patients. When anxiety is detected, the treatment can then be handled by the psychologist primarily, with the primary care provider's supporting the process.

Substance abuse. It is difficult for both physicians and psychologists to identify substance abusers (Cummings, 2005). It has been found, however, that more individuals who use substances will admit their problems in written form than in face-to-face interviews. Using validated instruments, such as the CAGE or the Michigan Alcoholism Screening Test, can improve the detection of such problems (Cummings). Although it has been recognized that physicians are reluctant to probe individuals who potentially abuse substances for more information, the integrated care setting provides the opportunity for a behavioral specialist to explore such issues with clients. If it appears that the problems need more attention, the physician is then able to directly hand the patient over to the psychologist for a variety of possible treatment strategies (Cummings).

Physical problems. Psychologists can also contribute to the treatment of physical problems. For example, in the treatment of obesity, psychologists can often help to set realistic goals, create a self-monitoring system, utilize stimulus control techniques, engage in cognitive restructuring, implement stress-management skills, and improve social support. These techniques have been credited with an average of 22 lbs. of weight lost over a 6-month treatment period (Conard, Poston, & Foreyt, 2005). Psychologists can also contribute to pre-

and postsurgical care (Kessler, 2005), where, as mentioned earlier, $1 spent in behavioral intervention is equal to a 10-dollar reduction in medical costs (Friedman et al., 1995). Other uses included care for chronic headaches (Arena & Blanchard, 2005), for which behavioral techniques have been credited with a drastic reduction in medical usage, reducing costs to 1/8 of their original price; chronic pain (Robinson, Gardea, Maddrey, & Gatchel, 2005); diabetes (Callaghan, Gregg, Ortega, & Berlin, 2005); medication adherence (Levensky, 2005); and asthma (Byrd, Ferguson, Henderson, Oksol, & O'Donohue, 2005), for which intervention programs have been found to be successful enough to more than pay for themselves through reduced medical costs.

Summary of the treatment of specific health concerns through integrated care. The literature reviewed strongly suggests that integrated care is an effective and efficient way to care for many of the same problems that are present in the college atmosphere. To implement such strategies, many options for integration arise.

Ways to Integrate a Primary Care Practice

All integrated care models come from the same fundamental concept: the low rate of use of behavioral services in conventional medical settings stems directly from the fact that physicians need immediate, on-site help when confronted with a patient presenting psychological problems (Strosahl, 2002). Physicians lack the time and, occasionally, expertise for behavioral interventions; they also recognize that patients are unlikely to follow through with referrals. This exemplifies the need for integrating behavioral care in the primary care provider's practice. There are many ways to improve the deficits that exist for the treatment of behavioral problems in a primary care setting (Maruish, 2000).

Types of integrated care models. Physicians could increase their knowledge base about behavioral problems. For example, they could use the Med-Plus model (Pruitt et al., 1998), which adds a physician-education element to the integrated care plan. The authors stress that when situations require an advanced role for the psychologist, the primary care physicians should be educated through the initial collaborative consultation meetings and, if necessary, formal lectures. Some physicians might be interested in furthering their behavioral education, which can be done through a more intensive set of training sessions. However, the demands of being a physician make it more likely that he/she would not be willing to spend adequate time on education and would prefer to implement a screening procedure and integrate with a psychologist.

It is important to recognize that the word *integrated* can define a variety of levels of integration (Byrd et al., 2005). As some have noted, integration can come in as basic a form as asking the client to call a 1-800 number (O'Donohue et al., 2003). Gatchel and Oordt (2003) proposed four models for psychologists to become better involved with the primary care system, essentially creating a situation where psychologists have direct involvement, which eliminates the need for referrals. These systems mirror those presented by many others, including Blount (1998) and Strosahl (1998). The least integrated model is the Colocated Clinical Model, which involves the medical and behavioral care offices' being located in the same building. This is not a truly integrated model, as the psychologist is not integrated into the medical team. However, this model does have two benefits: it raises the probability of referred patients following through with psychology appointments, and it increases communication between physicians and psychologists.

The second model is the Psychologist as Primary Care Provider Model. In this case, the physician turns a case over to a psychologist who is part of the medical team, leaving the psychologist to be the primary care provider for the client. In this situation, patients often feel as though they are still under the care of their primary care physician but are receiving care that is better suited for their behavioral problems.

The Behavioral Health Consultant Model would place a psychologist in primary care management teams, in which the psychologist would act as an advisor in the treatment planning for patients. In this instance, the psychologist is active in the assessment of patients during primary care visits, working with the physician to determine a proper course of action for the presenting problems. In these cases, the psychologist sees the patient immediately rather than at a later scheduled appointment. Psychologists in this model see patients for a shorter time than is typical for therapy (e.g., 15 minutes instead of 50 minutes). If the patient's case requires long-term behavioral care, the team psychologist would refer this case out; he or she would not directly treat the patients.

The final model proposal is the Staff Advisor Model, which calls for communication only when needed by the physician. In contrast to the psychologist in the Behavioral Health Consultant Model, the psychologist in the Staff Advisor Model does not maintain an office in the primary care setting. Instead, communication occurs through weekly meetings, phone contact, or e-mail. Robinson and Strosahl (2000) used the term *local expert* to describe the psychologist in the Staff Advisor Model. However, they also noted that although it is important to have these behavioral experts, it is also important for successful integrated care to have on the team physicians, nurses, and pharmacists with a certain level of expertise in the most common behavioral problems.

It should be noted that the four models listed above are not mutually exclusive. Instead, aspects of each may be combined to provide care in the best way for the situation.

Skills required and challenges encountered in integration. It is important for the primary care psychologist to prepare him/herself for the primary care setting (McDaniel et al., 2002). It is crucial to have an understanding of the biological, cognitive, behavioral, developmental, and sociocultural components of health and illness. Additionally, the psychologist should become familiar with the problems typically presented in their primary care setting, as well as the standard procedures for treatment. Finally, familiarity with healthcare policy and systems, as well as the legal, ethical, and professional issues of primary care, is necessary.

Although primary care psychologists must familiarize themselves with primary care, the actual implementation of integrated care may still be challenging. Such challenges can come from the medical side, the behavioral side, or both (Gatchel & Oordt, 2003; Blount, 1998; Strosahl, 1998; Pruitt et al., 1998; Maruish, 2000; O'Donohue et al., 2003). As mentioned in the Behavioral Health Consultant Model, described previously, psychologists may be working in primary care at a pace that is typically much quicker than what general psychology practice would dictate (e.g., 15-minute appointments compared to 50-minute appointments) (O'Donohue et al., 2003; Wilson, 2004). In addition, for psychologists working in systems such as the Behavioral Health Consultant or Staff Advisor models, the multiple-session assessments that are favored by some psychologists must give way to more instant, rapid assessments that require that diagnostic decisions be made with relatively little objective psychometric data. Similarly, in models that share assessment duties, physicians and psychologists are required to work with a team-oriented approach, thus giving up some

of their typical roles, choosing instead to focus more within their areas of expertise (Maruish, 2000; Blount, 1998). A willingness to share the care of a patient is important to effective integrated care of patients, especially under such models as those presented by Gatchel and Oordt (2003).

It is particularly important for psychologists to understand that physicians may be resistant to enlisting the help of a psychologist, especially if the psychologist is too forceful in introducing the new method in the clinic (Maruish, 2000). It is most important to give clinics a certain amount of latitude in choosing a method of integration. At the same time, some warn that psychologists should be cooperative without acquiescing too often (Gatchel & Oordt, 2003). This is especially important in diagnosis and treatment discussions once the integrated care program has been put in place. In such situations, the psychologist must feel free to express his or her opinion as is allowed within the systematic framework.

In their exploration of the collaboration preferences of general practitioners, Doron, Ma'oz, Fennig, Weingarten, and Mendlovic (2003) found that general practitioners preferred working together over giving the patient over to the mental health practitioner for care. Additionally, Doron et al. found that the general practitioners expect the mental health specialists will act as advisors rather than directly treat patients. In general, general practitioners were willing to work with mental health practitioners but did not want to hand over their patients.

Summary of methods of integration. The term *integration* has many meanings (Byrd et al., 2005). Although this may complicate the definition of integrated care, it creates a flexible environment for the involvement of psychologists in medical practice. The current

models of integrated care demonstrate that physicians and psychologists have come together to find multiple ways to work together to promote better health care.

Satisfaction with Primary Care Visits

Although integrated care has been shown to be successful in terms of quality of care and cost offset, it would be a mistake to implement such a process without considering the perceptions of the patients and physicians involved in the process.

Patient satisfaction. Katon (1995) commented on data that suggest that some of the most dissatisfied primary care patients have headaches, back pain, or depression. He hypothesized that patients in all three of these categories are potentially psychologically distressed. Additionally, Katon hypothesized that these patients are likely to be in a subset of patients in primary care who have been described to have unexplained physical problems.

Patient satisfaction has traditionally been measured through two approaches, termed *indirect* and *direct* (Attkisson & Greenfield, 1999). The indirect approach assesses individual opinions about a person's healthcare experience as a whole, whereas the direct approach focuses on the care that individuals have received in their most recent visits. Additionally, global and multidimensional measures provide two ways to assess each of the areas of focus. Global measures typically search for broad dichotomous answers, whereas the multidimensional measures use ratings to gain a more detailed understanding of how the patient rated each aspect of care.

Blount (1998) noted that patient satisfaction studies for integrated care are few and far between. The most commonly cited study (Katon et al., 1995) found that patients who received integrated care interventions reported that they were satisfied with their visit 93% of

the time, whereas the control group was satisfied 75% of the time. The researchers hypothesized that the higher satisfaction is due to an improvement in the outcome of the individual's care resulting from integrated care.

Although such comparison data are indicative of improved satisfaction with integrated care, Larsen, Attkisson, Hargreaves, and Nguyen (1979) recognized that regardless of how researchers collect satisfaction data, high levels of satisfaction are commonly reported. Byrd and O'Donohue (in progress) corroborated this finding, noting that in a pediatric integrated care study, 85.7% of the patients' direct, multidimensional satisfaction ratings were a perfect score of 100.

Ways to improve discrimination of patient satisfaction with visits include asking questions from both the positive and negative ends of the continuum, as well as providing a basis for comparing the current visit to other visits. This is important because research has shown that asking questions focused on dissatisfaction rather than satisfaction would likely elicit more negative responses (Larsen et al., 1979). Increasing discrimination by providing a basis of comparison can be resolved by either relating satisfaction to expectations or taking multiple measurements over time. Additionally, the comparison in satisfaction between two groups, such as a group receiving regular medical care and a group receiving integrated care, may still be a means of discovering differences in satisfaction. Although both groups may give high ratings, it is worth comparing the difference in ratings between the two groups.

It is also difficult to obtain a representative sample for evaluation (Larsen et al., 1979). Attkisson and Greenfield (1999) noted this problem, citing the importance of a high response rate to help reduce biases. Anonymous paper questionnaires administered immediately after appointments have much higher response rates (97%) than any of the other

options (21% to 40%). Additionally, it has been noted that satisfaction is often assessed without a basis for comparison.

In summary, the data currently available on patient satisfaction with integrated care have many deficiencies. Although integrated care appears to increase patient satisfaction, there are numerous potential confounds to those results. This is an area that needs future exploration.

Physician satisfaction. Physician satisfaction is an intriguing area because it carries with it a presumption that satisfaction will dictate the willingness to engage in an integrated care program. Typically, physician satisfaction has been considered only in the broader areas of occupational satisfaction, such as job characteristics or features of employment (Shore & Franks, 1986). Research on satisfaction within integrated care settings has not been published (Blount, 1998).

However, factors contributing to physician satisfaction have been researched. A study by Shore and Franks (1986) explored ways to evaluate physician satisfaction on a *per visit* basis. They felt that four areas were particularly important to consider, including interpersonal, professional, personal, and contextual factors, of which the most influential were the contextual and interpersonal factors. This yields two important characteristics of provider satisfaction: First, the difficulty of the physician's day correlates with the physician's satisfaction. For instance, if the physician feels too busy or is having a bad day, he/she is likely to feel less satisfaction. Second, the way that the physician feels about the patient also has an influence. This is exemplified through answers like "felt good as physician" or "effort not appreciated" (Shore & Franks, 1986, p. 586).

At the present time, this area has been unexplored in the college healthcare setting. One aspect of this study was a preliminary analysis of patient and physician satisfaction.

Summary of satisfaction. A variety of ways to assess the satisfaction of both patients and physicians in primary care have differential advantages. The little data that exists on patient satisfaction indicates, however, that integrated care improves rates of satisfaction.

Application of Integrated Care to the College Setting

College students have a wide variety of physical and mental health concerns. For the general population, integrated care is becoming a more frequently implemented model of care. Additionally, research for the general medical population suggests that patients enrolled in integrated care programs are satisfied with their care. It appears, then, that integrated care has the potential to be a method for the better coverage of health concerns in the college population.

Evaluation of Behavioral Health in Primary Care

In exploration of the possibilities for integrated care in the college setting, it is important to be able to effectively identify psychological distress among patients. One way to achieve this goal is through the use of brief, user-friendly screening questionnaires.

Evaluation of behavioral health through questionnaires. Given that psychological problems are typically not a physician's area of specialty, questionnaires provide a convenient way to gather important information without a psychologist initially being present for assessment. Following up the questionnaire by calling on an integrated care psychologist has the potential to further help with the identification and treatment of behavioral problems.

In the case of the present study, questionnaires were used to identify the presence of psychological distress and assess the need for integrated care.

Cowan and Morewitz (1995) found that the use of a questionnaire about psychosocial concerns increased the likelihood that the college patient and/or physician would talk about behavioral issues that might be contributing to some of the health concerns. Referring to patients' medical charts, the researchers found that 36% of the 200 patients who received the questionnaire had severe psychosocial problems recorded, much higher than the 8% recorded in the charts before the study. The authors also noted that physicians cited the utility of the questionnaire in many of their reports, leading to the belief that the use of the questionnaire was valuable to their practice. It is likely that considering psychosocial questions raised awareness of these issues for both physicians and patients. Further research has not been pursued in this area for the college population.

Similarly, in a study of pediatric integrated care, Byrd and O'Donohue (in progress) developed a questionnaire with the intention of improving the communication of behavioral problems in pediatric medical visits. Although over half of the parents involved in the study found the questionnaire to be useful in addressing behavioral problems, physicians reported that the questionnaire did not improve their practice. However, data revealed that the physicians did detect more behavioral problems when using the questionnaire.

Whereas some researchers were able to demonstrate an increase in discussion about behavioral problems from their respective questionnaires (Cowan & Morewitz, 1995; Byrd & O'Donohue, in progress), others have created questionnaires that aid in the detection and diagnosis of specific problems (Hahn et al., 2000). This is especially important when medical symptoms are present in the situation, as patients and physicians might be led to

believe that only a medical problem is present (Maruish, 2000). This could lead to a path of medication and long-term care, whereas integrating a method of behavioral care might produce more efficient results.

Primary Care Evaluation of Mental Disorders (PRIME-MD). Physicians could be greatly aided through a brief screener that would produce red flags for possible behavioral problems. Utilizing the time spent in the waiting room to fill out questionnaires on behavioral problems could prepare the patient and physician to focus on the most important issues (Robinson & Strosahl, 2000). One such screener is the Primary Care Evaluation of Mental Disorders (PRIME-MD) (Hahn, Kroenke, Williams, & Spitzer, 2000), a screening and diagnosis instrument that can be administered by primary care physicians. The PRIME-MD was designed to be accurate, easy to administer, fast, and cost-effective.

Development of the PRIME-MD was based on the needs identified in research on the underdetection of mental disorders by physicians and the need to recognize the comorbidity of disorders presented by many patients (Hahn et al., 2000). Together, these issues highlighted a need for an instrument that could identify a wide variety of mental disorders.

The developers of the PRIME-MD specified basic criteria for including a diagnosis (Hahn et al., 2000): First, the condition must be common and important in the realm of health-related quality of life. Second, the screening procedure must be accurate yet within an acceptable level of cost. Third, early identification of the problem must improve treatment outcome compared to discovery of the disorder at a later time. Finally, an acceptable and effective treatment for the condition must be available at the time of identification. It was regarded as unnecessary to include subtypes of conditions or conditions that are commonly detected through regular primary care practices, such as thought disorders.

Preliminary studies on physician detection, rates of detection, physician factors influencing detection, patient factors influencing detection, and systems factors supported the need for the administration of the PRIME-MD in the medical setting (Hahn et al., 2000; Spitzer et al., 1999). Specifically, a validation study on 1,000 patients found that nearly half of the patients diagnosed through the PRIME-MD had not been recognized previously by the physician as having that problem (Spitzer et al., 1994).

The PRIME-MD has two components, the Patient Questionnaire (PQ) and the Clinician Evaluation Guide (CEG). The PQ is a 25-question screening instrument with yes/no answers. The questions are in five sections; the first 15 questions represent common physical symptoms, which are followed by an eating disorder question, then two mood disorder questions, three anxiety disorder questions, and four alcohol questions. It should be specially noted that first 15 questions were developed with the intention of recognizing somatic symptoms that would likely have prompted the patient to seek medical attention. Although these questions are important to the instrument, they are also important for the comfort of the patient, who is expecting treatment for physical symptoms. Responses that trigger red flags are followed up with the Clinician Evaluation Guide, which is a structured interview that will guide the clinician to a DSM-IV diagnosis. The PRIME-MD has been shown to have good validity and utility with sensitivity of 83%, specificity of 88%, and overall accuracy of 86% in comparison to the diagnoses of mental healthcare providers (Hahn et al., 2000).

Patient Health Questionnaire (PHQ). Further development of the PRIME-MD led to the newer and more commonly used assessment tool, the Patient Health Questionnaire (PHQ). The PHQ was developed with the intention of taking the burden of the application

time of the screening instrument off the physician and putting it on the patient (Spitzer et al., 1999). The PHQ was found to be equally valid and more time efficient than the original PRIME-MD (Spitzer et al., 1999). A comparison analysis showed that, in general, the PHQ is less sensitive for broad categories than the original instrument (i.e. "any mood disorder", p. 1740) but has the tendency to be more sensitive for specific disorders (i.e., "major depressive disorder", p. 1740). Additionally, the PHQ reached the goal of being more time efficient, as it took substantially less time for physicians to evaluate the PHQ than to evaluate the original PRIME-MD.

College Health Questionnaire (CHQ). The published literature indicates that the college community presents a unique psychological environment. Specifically, research on college mental health has focused on drug and alcohol use, as well as problems related to college adjustment specifically. Although the PHQ addresses alcohol use, it does not address substance use, nor does it address problems specific to being a college student. With this in mind, the CHQ was developed for this study with the intention of gaining information regarding drug use and other prevalent problems among college students, such as problems with academics, relationships, roommates, feeling overwhelmed, finances, and homesickness. The problems addressed in the CHQ were not prevalent enough in the general population to warrant inclusion in the PHQ, thus necessitating the addendum to the questionnaire.

Purpose of the Present Study

The present study sought to assess the benefits of using the Primary Health Questionnaire (PHQ) and the newly created College Health Questionnaire (CHQ), two self-

report instruments, for the identification of behavioral problems during primary care visits of college students to a college health service. These instruments sought to aid medical care providers with their assessment of the individual's health problems by identifying behavioral factors associated with the patient's visit. Patients completing the questionnaires comprised the experimental condition and were compared to a control condition of treatment as usual.

The time restrictions of the primary care setting were considered in the decision to use the PHQ-CHQ. The PHQ has been documented to take less than 5 minutes to complete and the CHQ was written in a similar format that is not expected to significantly increase the time taken to complete the questionnaires. Additionally, in comparison to interview-based assessment devices, the PHQ-CHQ takes relatively little physician time to review. Additionally, it can be completed by the patient while sitting in the waiting room.

The study was designed to evaluate whether use of the PHQ-CHQ:

1. Affects the ability of college health primary care providers to detect behavioral distress and problems in a time-efficient and feasible manner.
2. Aids primary care providers in addressing the so detected behavioral problems through:
    a. Referral to mental health specialists (psychologists and psychiatrists)
    b. Prescription of psychotropic medications
3. Affects the satisfaction of patients with their primary care visits.
4. Affects the satisfaction of medical care providers with their patients' visits.

Hypotheses

It was hypothesized that

1. The use of the PHQ and CHQ would lead to an increase in the detection of behavioral distress and problems in patients in comparison to usual assessment procedures.
    a. The use of the PHQ and CHQ would result in a higher rate of referral to mental health specialists for the experimental group compared to the control group.
    b. The use of the PHQ and CHQ would result in a higher rate of prescription of psychotropic medications.
2. The use of the PHQ and CHQ would increase patients' satisfaction with their primary care visits, as operationalized by higher scores on the satisfaction questionnaires for patients in the experimental group compared to the control group.
3. The use of the PHQ and CHQ would increase medical care providers' satisfaction with their primary care visits. This would be operationalized by
    a. Each clinician's satisfaction ratings for the experimental group compared to the control group.
    b. Each clinician's ratings in the summary analysis of his/her experience of using the questionnaires in patient visits.

Method

Participants

Patients. A total of 200 patients submitted valid data for this study; 109 patients were in the experimental condition, and 91 patients were in the control condition. An additional 17 participants were excluded from the study because of incomplete data. Refusal to participate was not tabulated but was reported by the clinic receptionists to be disproportionately high among male experimental-group participants.

Of the 200 patients, 72 were male (the mean age was 23.49 years), 75% percent were Caucasian, and most (95%) spoke English as their primary language. Approximately half (50.5%) presented for care for illness, and the remaining 50% presented with a variety of other concerns. Details are presented in Table 1.

Table 1

Descriptive Statistics of Patient Participants (N = 200)

Diagnosis	*n*	%
Experimental conditions		
Experimental group	109	54.5
Male	36	33.0
Female	73	67.0
Control group	91	45.5
Male	36	39.6
Female	55	60.4
Gender		
Male	72	36.0

Table 1 (continued)

Female	128	64.0
Ethnic background		
White	150	75.0
Spanish/Hispanic/Latino	3	1.5
Native American	2	1.0
Biracial	4	2.0
Black or African American	30	15.0
Asian/East Indian/Pacific Islander	10	5.0
Middle Eastern	1	.5
Primary language		
English	190	95.0
Chinese	2	1.0
Telugu	2	1.0
Russian	2	1.0
Japanese	1	.5
Turkish	1	.5
Portugese	1	.5
Romanian	1	.5
Reason for visit to provider		
Sick	101	50.5
Hurt or injured	13	6.5
Depressed or anxious	4	2.0

Follow-up	8	4.0
Physical	11	5.5
Women's annual	13	6.5
Miscellaneous other concerns	50	25.0

Providers. A total of seven providers participated in this study. As is shown in Table 2, the majority of the providers were female; their qualifications were evenly distributed across the categories of Medical Doctor, Nurse Practitioner, and Resident; and the majority were White.

The distribution of visits by provider is listed at the end of Table 2. For analyses presented in the Results section of this report, the variable Provider was transformed from seven individuals to three categories of providers. Two individual providers who saw the majority of the patients were each coded separately into his/her own separate category. Provider 2 saw 67 patients, and Provider 3 saw 98 patients. The remaining five providers, who saw a combined total of one third of the patients, were grouped together and were labeled as Provider group 1. These five providers work only part time at the university health clinic and consisted of one physician, one nurse-practitioner, and three physicians in residency training.

Table 2

Descriptive Statistics of Providers (N = 7)

Diagnosis	*n*	%
Gender		
Male	2	28.6
Female	5	71.4
Title		
Medical doctor	2	28.6
Nurse practitioner	2	28.6
Resident	3	42.9
Ethnicity		
White	5	71.4
Middle Eastern	1	14.3
Other	1	14.3
Number of patients treated by each provider		
Provider group 1	35	17.5
Provider 1a	5	2.5
Provider 1b	2	1.0
Provider 1c	8	4.0
Provider 1d	15	7.5
Provider 1e	5	2.5
Provider 2	67	33.5
Provider 3	98	49.0

As shown in Table 3, providers indicated that they typically have treated college students for less than five years and although they indicated an adequate amount of comfort in providing behavioral treatment, they felt that their quantity and adequacy of training was only moderate.

Table 3

Provider Self-report Regarding Behavioral Treatment for College Students

	N	*M* ± *SD*	Median	Mode
Years treating college students	7	4.29 ± 3.16	3.00	2
Level of comfort providing behavioral treatment*	7	7.43 ± 1.72	8.00	8
Quantity of training in behavioral care *	7	5.96 ± 0.69	6.00	6
Adequacy of training *	7	6.00 ± 1.00	6.00	6
Knowledge of local behavioral care resources *	7	5.57 ± 1.90	6.00	4

* Rating scale is from 1 *low* to 10 *high*

Measures

Patient Health Questionnaire (PHQ) (Spitzer et al., 1999). The PHQ (see Appendix A) was the primary questionnaire in this study, used with permission of PHQ developer Kurt Kroenke (see Appendix B). This questionnaire has 15 questions, many of which have subquestions. Subsections address the diagnostic categories somatic disorder, major depression, panic, anxiety, bulimia, binge eating, and alcohol abuse. The questionnaire is constructed with specific identifying questions and skip-outs when appropriate criteria are not met.

The PHQ has been validated on a sample of 3000 adult patients (Spitzer et al., 1999). The validation study reported overall accuracy of 85%, sensitivity of 75%, and specificity of 90% when the PHQ was compared to the diagnoses made by mental health professionals on the basis of a clinical interview. Additionally, the PHQ was found to be comparable to the original clinician-administered PRIME-MD in terms of diagnostic validity. A comparison of time taken to review the PHQ and the PRIME-MD showed that the PHQ took less than 3 minutes 85% of the time, whereas the PRIME-MD took less than 3 minutes 16% of the time.

EMU College Health Questionnaire (CHQ) (constructed by the author for this study). The EMU College Health Questionnaire (Appendix C) consists of five additional questions covering disordered eating, drug use, sexual identity, and college-adjustment issues. These questions represent areas of college-student distress that were not covered by the PHQ. Although other questionnaires, such as those used by the American College Health Association and the Monitoring the Future group, contain many similar questions, neither questionnaire nor the two together tap all of the adjustment problems that present at college counseling centers. Therefore, the CHQ was developed for this study to more completely cover the breadth of college-student adjustment problems. The importance of including such questions was analyzed together with and separately from the PHQ.

No preexisting psychometrics are available on the additional questions or the EMU College Health Questionnaire, but preliminary data were collected in this study.

Medical care provider questionnaires. The medical care providers involved in this study completed an informed consent (Appendix D) and three questionnaires (adapted from Byrd & O'Donohue, in progress). Prior to the beginning of patient data collection, providers completed the provider background questionnaire on their prior treatment of behavioral

problems and their perceptions of behavioral care (Appendix E). After each visit, they completed a questionnaire regarding their satisfaction with the outcome of the visit (Appendices F and G) and indicated any behavioral interventions that were provided. At the end of the study, they completed a questionnaire regarding their opinions about the usage of the PHQ and the CHQ (Appendix H).

Additional patient questionnaires. All patients received a letter of invitation serving as informed consent for the study (Appendices I and J). Participants completed a background questionnaire assessing demographic information as well as the reason for that day's visit (Appendix K). Patients also filled out a postvisit questionnaire, assessing the outcome and satisfaction levels associated with the visit (Appendices L and M).

Design

Participants were randomly assigned to the control and experimental groups. Packets for the experimental and control groups were randomized and given to the clinic receptionists. When a patient arrived for an appointment, the receptionist removed the top packet from the pile and gave it to the participant. For the most part, the randomization worked well, as each participating medical care provider had approximately half of their patients in each condition.

Due to a disproportionate number of male participants' refusing to participate, data collection for all groups other than male experimental patients was halted after 188 participants. The final 12 participants were all males assigned to the experimental condition.

Procedures

This study was approved by the Eastern Michigan University Department of Psychology's Human Subjects Review Committee (HSRC). Appropriate research participant protections were used, including informed and voluntary consent and confidentiality procedures.

Recruitment of medical care providers. Medical care providers were recruited at a University Health Service staff meeting three days before the beginning of data collection. They were asked to participate in a study assessing ways of improving the care for their patients.

Pre-data-collection procedures: Providers. The informed consent (Appendix D) and physician background questionnaire (Appendix E) were completed at the end of this meeting.

Recruitment of patients. The recruitment of patients occurred when they presented for care. After checking in for their appointments, patients were given a research packet that included a letter inviting them to participate in the research project.

The researcher had delivered a randomized pile of questionnaire packets to the clinic's receptionists at the beginning of the study and replenished the pile as necessary throughout the 3-week data-collection period. Each packet had a unique identification number, and each form within the packet had that number written on it. The packets contained two clipped sections: The first part included the forms that were given to patients as they checked in for their appointments (contents described in following sections). The second part included the postvisit forms, which were placed in each patient's chart (contents described in following sections).

As each patient checked in to the health clinic, the receptionist handed him/her the packet on the top of the pile and asked him/her to participate in the study. Patients then had the opportunity to read the informed consent and complete the remaining forms in the intake packet. After handing the patient the intake packet, the receptionist placed the postvisit forms in the patient's chart to be distributed by the medical care provider at the end of the patient's visit.

Experimental condition procedures: Patients and providers. Following recruitment, experimental condition participants received their previsit packets. The first page was an invitation to participate in the study (Appendix I). The second page was a basic demographic questionnaire (Appendix K). The following 4 pages were the PHQ (Appendix A) and CHQ (Appendix C).

Patients were asked to complete the questionnaire in the waiting room and give the completed packet to the nurse upon entering the examination room. The nurse placed the forms in the patient's chart for the provider. The medical care provider then retrieved the forms from the chart and determined the best way to use the information the patient provided. At the completion of the visit, the medical care provider placed the research materials in a locked research box located either in the examination room or the provider's office.

At the end of the visit, the provider retrieved the patient and provider satisfaction forms from the chart (Appendices F and L), giving the patient form to the patient to complete before leaving. Patients deposited their satisfaction questionnaires in locked research boxes in the examination rooms, whereas the providers deposited their satisfaction questionnaires in the research boxes in the provider offices.

Control condition procedures: Patients and providers. Following the recruitment procedure described above, control condition patients received their previsit packets. The first page was an invitation for participation in the study (Appendix J). The second page was a basic demographic questionnaire (Appendix K).

Patients were asked to complete the questionnaire in the waiting room and give the completed packet to the nurse when they entered the examination room. The nurse placed the forms in the patients charts for the provider. At the completion of the visit, the medical care provider placed the research materials in a locked research box in the examination room or the provider's office.

At the end of the visit, the provider also retrieved the patient and provider satisfaction forms from the chart, giving the patient form to the patient to complete before leaving (Appendices G and M). Patients deposited their satisfaction questionnaires in locked research boxes in the examination rooms, whereas the providers deposited their satisfaction questionnaires in the research boxes in the providers' offices.

Post data-collection procedures. The medical care providers who participated in this study completed a summary analysis questionnaire (Appendix H) during the week following data collection.

Results

Summary

The current study served as an exploratory study in which the researchers investigated changes in behavioral care in a university health clinic resulting from the use of two behavioral questionnaires, the PHQ and the CHQ. The following analyses describe the differences in referral for behavioral care, prescription of psychotropic medications, and discussion of behavioral problems for patients who completed the PHQ and the CHQ and provided the information to their providers (experimental condition) compared to patients who received treatment as usual (control condition). Further analyses examined differences in care for experimental group patients on the basis of whether they met psychiatric diagnoses, endorsed self-rated functional disruption, or indicated the presence of college-related adjustment challenges. Finally, patient and provider satisfaction with treatment were statistically described and analyzed.

Behavioral Treatment

Dependent Variables

The dependent variables of interest, that is, referrals for behavioral treatment, prescription of psychotropic medications, and the discussion of behavioral problems, were measured in two ways: provider postvisit report and patient postvisit report. Table 4 shows that patient and provider reports were not identical. However, as Table 5 indicates, patient and provider responses are correlated to a statistically significant degree. By design, prescriptions of psychotropic medications were not assessed on the patient postvisit report

because of concerns whether patients would be able to correctly discriminate psychotropic medications from other medications.

For the analyses reported in the following sections, provider postvisit report data were used for the dependent variables. It was assumed that provider reports would be more accurate than patient reports, as providers have the training to better discriminate between different forms of treatment. However, this decision was made with the understanding that one could argue that patient report is most important, as it is representative of the message that is actually received from the provider.

Table 4

Patient and Provider Reports of Discussion of Behavioral Problems and Referrals for Behavioral Treatment

Intervention	*n*	%
Behavioral problems discussed		
Patient report	71	35.5
Provider report	73	36.5
Referral for behavioral treatment made		
Patient report	25	12.5
Provider report	20	10.0

Table 5

Correlation Between Provider and Patient Self-report of Behavioral Interventions

Variable	1	2	3	4	5
1. Patient: Behavioral problems discussed	--				
2. Patient: Referral for behavioral treatment made	.36 ***	--			
3. Provider: Behavioral problems discussed	.46 ***	.44 ***	--		
4. Provider: Referral for behavioral treatment made	.35 ***	.58 ***	.41 ***	--	
5. Provider: Prescribed psychotropic medications	.25 ***	.20 **	.33 ***	.06	--

** $p < .01$. *** $p < .001$.

Referrals for Behavioral Treatment: Hypothesis 1a

The use of the PHQ and CHQ will result in a higher rate of referral to mental health specialists for the experimental group compared to the control group.

Referral to mental health specialists was assessed in providers' postvisit reports. A Pearson's chi-square was used to test Hypothesis 1a. The categorical variables were experimental condition (experimental or control) and whether or not a referral was made.

Overall, 20 patients (12.5% of patients) were referred to mental health specialists. This included 13 patients in the experimental condition (12% of experimental patients) and 7 patients in the control group (8% of control patients). As indicated in Table 6, the Pearson's chi-square showed no significant difference in referral rate between the two experimental groups. Thus, Hypothesis 1a was not supported.

Table 6

Chi-square Test of Difference in Referrals Between the Experimental and Control Conditions

Outcome	Experimental condition (n = 109)	Control condition (n = 91)	$\chi^2(1)$
Referral for behavioral treatment	13 (11.9%)	7 (7.7%)	.988

Note. Percentages indicate percentage of participants within each condition.

Supplemental analysis regarding referrals. With seven different providers participating in this study, it was necessary to explore the potential for any outcome results to be at least partially a reflection of the provider. A logistic regression model was used to test for such influences. The independent variables in this model were the categorical variable of condition (experimental vs. control) and the categorical variable of provider. The variable Provider was transformed from seven individuals to three categories of providers. Two individual providers who saw a majority of the patients were each coded separately into their own separate categories. Provider 2 saw 67 patients, and Provider 3 saw 98 patients. The remaining five providers, who saw a combined total of one third of the patients, were grouped together in Provider group 1 and were used as the comparison (indicator) group for this model. The providers in this group, consisting of one physician, one nurse-practitioner, and three physicians in residency training, worked only part time at the university health clinic while working at one of two other community clinics during the remainder of the week The rationale for using these five providers as a comparison group stemmed from the fact that they have a variety of qualifications and background experience and thus could be argued to represent the standard of care for the college patient population. The dependent

variable was whether or not a referral for behavioral treatment was made during the visit, as indicated in provider postvisit report.

As indicated in Table 7, the model reveals that no significant main effects were present for condition or provider.

Table 7

Logistic Regression Predicting Referrals for Behavioral Treatment

Predictor	β	*SE*	Odds Ratio	Wald Statistic	
Provider group 1 (Comparison group)				4.866	
Provider 2	-1.147	0.669	0.318	2.943	
Provider 3	0.062	0.595	1.064	0.011	
Condition	0.535	0.499	1.707	1.149	
Constant	-2.107	0.580	0.122	13.216	***

*** $p < .001$

Prescription of Psychotropic Medications: Hypothesis 1b

The use of the PHQ and CHQ will result in a higher rate of prescription of psychotropic medications.

Prescription of psychotropic medications was assessed in providers' postvisits reports. A Pearson's chi-square was used to test Hypothesis 1b. The categorical variables were experimental condition (experimental or control) and whether or not psychotropic medications were prescribed.

Across the experimental and control conditions, 12 patients (6% of patients) were prescribed psychotropic medications in 200 visits. This included 10 patients in the

experimental condition (9.2% of experimental patients) and 2 patients in the control condition (2.2% of control patients). As indicated in Table 8, the Pearson's chi-square showed a significant difference in prescription of psychotropic medications between the two experimental groups, χ^2 (1) = 4.280, $p < .05$. Thus, Hypothesis 1b was supported.

Table 8

Chi-square Test of Difference in Prescriptions Between the Experimental and Control Conditions

Outcome	Experimental condition (n = 109)	Control condition (n = 91)	$\chi^2(1)$
Prescription of psychotropic medications	10 (9.2%)	2 (2.2%)	4.280 *

* $p < .05$

Note. Percentages indicate percentage of participants within each condition.

Supplemental analysis regarding prescription of psychotropic medications. As noted in the supplemental analysis of referrals for behavioral treatment, the presence of multiple providers necessitated further analysis with a logistic regression model. The independent variables in this analysis were the categorical variables of condition and providers. The dependent variable was whether or not psychotropic prescriptions were given during the visit.

The model indicates that no significant main effects were found for the providers, but results trended toward a significant main effect for the condition (p = .061; see Table 9). The

odds of prescribing psychotropic medications for the experimental condition were almost 4.5 times greater than for the control condition.

Table 9

Logistic Regression Predicting Prescriptions of Psychotropic Medications

Predictor	β	*SE*	Odds ratio	Wald statistic	
Provider group 1 (Comparison group)				1.878	
Provider 2	1.467	1.071	4.338	1.877	
Provider 3	-17.607	4778.032	.000	.000	
Condition	1.499	.800	4.479	3.516	
Constant	-4.577	1.218	.010	14.124	***

*** $p < .001$

Supplemental Analysis Regarding the Discussion of Behavioral Problems

Visual inspection of the data resulted in the detection of a potentially significant difference in the rate of discussion of behavioral problems between patients in the experimental and control conditions. Thus, a Pearson's chi-square was used to investigate this potential difference. The categorical variables were experimental condition (experimental or control) and whether or not a referral had been made.

Overall, 20 patients (12.5% of patients) were referred to mental health specialists. This included 13 patients in the experimental condition (12% of experimental patients) and 7 patients in the control group (8% of control patients). As indicated in Table 10, the Pearson's chi-square showed that experimental group participants discussed behavioral problems with

their provider significantly more frequently than did control group participants (χ^2 (1) = 20.139, $p < .01$).

Table 10

Chi-square Test of Difference in Discussion of Behavioral Problems Between Experimental and Control Conditions

Outcome	Experimental condition (n = 109)	Control condition (n = 91)	$\chi^2(1)$
Discussion of behavioral problems	55 (50.5%)	18 (19.8%)	20.139 ***

*** $p < .001$

Note. Percentages indicate percentage of participants within each condition.

As noted in the previous sections on referrals for behavioral treatment and prescriptions of psychotropic medications, the presence of multiple providers necessitated further analysis with a logistic regression model. The independent variables were the categorical variables provider and condition. The dependent variable was whether or not behavioral problems had been discussed during the visit.

As is shown in Table 11, the model indicates a significant main effect was present for Provider 3 ($p < .05$) and for the condition ($p < .001$). The odds of Provider 3's discussing behavioral problems was 2.8 times that of the comparison group. The odds that patients in the experimental condition had discussed behavioral problems were 4.4 times greater than that patients in the control group had discussed behavioral problems.

Table 11

Logistic Regression Predicting Discussion of Behavioral Problems

Predictor	β	*SE*	Odds ratio	Wald statistic	
Provider group 1 (Comparison group)				5.865	
Provider 2	.395	.463	1.484	.728	
Provider 3	1.053	.485	2.865	4.714	*
Condition	1.486	.334	4.419	19.818	***
Constant	-2.003	.471	.135	18.063	***

* $p < .05$. *** $p < .001$

Supplemental Analyses Regarding Diagnostic Criteria

Diagnostic criteria on the PHQ. The Patient Health Questionnaire has been validated as a diagnostic screening instrument. The number of patients who met diagnostic criteria in the present study ranged from 0% for bulimia to 12.8% for alcohol abuse (see Table 12). Approximately 28% of participants met diagnostic criteria in at least one domain.

Table 12

Experimental Condition Participants Meeting Diagnostic Criteria for Single and Multiple Diagnoses

	n	%
Diagnosis		
Somatic disorder	7	6.4
Major depression	8	7.3
Panic disorder	7	6.4
Anxiety disorder	2	1.8
Bulimia	0	0.0
Binge eating	5	4.6
Alcohol abuse	14	12.8
Number of comorbid diagnoses		
0	78	71.6
1	23	21.1
2	5	4.6
3	2	1.8
4	1	0.9

Note. Percentages indicate percentage of experimental condition ($N = 109$) participants.

As indicated in Table 13, the number of diagnostic criteria met was positively correlated with the discussion of behavioral problems ($p < .01$) and the prescription of psychotropic medications ($p < .001$) but not with referral for behavioral care.

Table 13

Correlation Between the Number of Diagnostic Criteria Met and Behavioral Treatment

Variable	1	2	3	4
1. Number of PHQ diagnoses	--			
2. Discuss behavioral problems	.28 **	--		
3. Refer for behavioral care	.15	.41 ***	--	
4. Prescribe psychotropic medications	.47 ***	.33 ***	.06	--

*** $p < .001$.

Chi-square analyses were used to evaluate whether the prescribed intervention differed significantly for patients who met diagnostic criteria compared to those who did not. As is displayed in Table 14, discussion of behavioral problems occurred significantly more with patients who met diagnostic criteria compared to those who did not, χ^2 (1) = 7.289, $p <$ .05. Similarly, patients who were prescribed psychiatric medications met diagnostic criteria significantly more than those were not prescribed medications, χ^2 (1) = 14.382, $p < .001$. Referrals for behavioral treatment, however, did not differ significantly between those who met criteria and those who did not.

Table 14

Chi-square Tests of Differences in Discussion of Behavioral Problems, Referrals for Behavioral Care, and Prescription of Psychotropic Medications for Experimental Condition Participants Based on Diagnostic Criteria

Outcome	Met diagnostic criteria (n = 31)	Did not meet diagnostic criteria (n = 78)	$\chi^2(1)$	
Discussion of behavioral problems	22 (71.0%)	33 (42.3%)	7.289	**
Referral for behavioral treatment	6 (19.4%)	7 (9.0%)	2.276	
Prescription of psychotropic medications	8 (25.8%)	2 (2.6%)	14.382	***

** $p < .01$. *** $p < .001$

Note. Percentages indicate percentage of participants within each condition.

Because of the variety of diagnoses that had the potential of being met, additional analyses were conducted on the most prevalent diagnoses. Pearson's chi-square analyses were computed individually, comparing patients who met diagnostic criteria to patients who did not meet diagnostic criteria for each of the following: alcohol abuse, major depression, and a combined panic and anxiety category. As indicated in Table 15, for Alcohol Abuse, referral to behavioral treatment was significantly more likely for those who met diagnostic criteria as opposed to those who did not, χ^2 (1) = 8.653, $p < .01$. For major depression, the discussion of behavioral problems, χ^2 (1) = 4.739, $p < .05$, and the prescription of psychotropic medications, χ^2 (1) = 29.464, $p < .001$, were significantly more frequent among those who met diagnostic criteria compared to those who did not. Finally, for Panic and/or Anxiety discussion of behavioral problems, χ^2 (1) = 4.739, $p < .05$, and prescription of

psychotropic medications, χ^2 (1) = 17.270, $p < .001$, was significantly more likely for those who met diagnostic criteria compared to those who did not.

Table 15

Chi-square Tests of Differences in Discussion of Behavioral Problems, Referrals for Behavioral Care, and Prescription of Psychotropic Medications for Experimental Condition Participants Based on Meeting Diagnostic Criteria for Alcohol Abuse, Major Depression, and Panic and/or Anxiety

Outcome	Met diagnostic criteria (n = 14)	Did not meet diagnostic criteria (n = 95)	χ^2 (1)	
Alcohol abuse				
Discussion of behavioral problems	10 (71.4%)	45 (47.4%)	2.826	
Referral for behavioral treatment	5 (35.7%)	8 (8.4%)	8.653	**
Prescription of psychotropic medications	2 (14.3%)	8 (8.4%)	0.504	
Major depression				
Discussion of behavioral problems	7 (87.5%)	48 (47.5%)	4.739	*
Referral for behavioral treatment	1 (12.5%)	12 (11.9%)	0.003	
Prescription of psychotropic medications	5 (62.5%)	5 (5.0%)	29.464	***
Panic and/or anxiety				
Discussion of behavioral problems	7 (87.5%)	48 (47.5%)	4.739	*
Referral for behavioral treatment	2 (25.0%)	11 (10.9%)	1.405	
Prescription of psychotropic medications	4 (50.5%)	6 (5.9%)	17.270	***

* $p < .05$. ** $p < .01$. *** $p < .001$

Note. Percentages indicate percentage of participants within each of the two categories, Met diagnostic criteria and Did not meet diagnostic criteria.

Supplemental analyses with respect to the PHQ question on functional disruption. Functional disruption was indicated by the final question on the PHQ, *If you checked off <u>any</u> problems on this questionnaire, how <u>difficult</u> have these problems made it for you to do your work, take care of things at home, or get along with other people?* Given that the DSM-IV frequently uses functional disruption as an important criterion for meeting a diagnosis, whether intervention differed for patients who endorsed this question compared to patients who did not endorse the question was further analyzed.

Pearson's chi-square was used to assess whether those who endorsed the functional disruption question differed significantly from those who did not across the three primary outcome variables: discussion of behavioral problems, referral for behavioral care, and prescription of psychotropic medications. As Table 16 indicates, significant increases in discussion of behavioral problems, χ^2 (1) = 17.037, $p < .001$, referrals for behavioral care, χ^2 (1) = 5.051, $p < .05$, and prescriptions for psychotropic medications, χ^2 (1) = 12.069, $p < .01$, were evident among those who endorsed functional disruption compared to those who did not.

Table 16

Chi-square Tests of Differences in Discussion of Behavioral Problems, Referrals for Behavioral Care, and Prescription of Psychotropic Medications for Experimental Condition Participants who Endorsed Functional Disruption Question and Those Who Did Not

Outcome	Endorsed functional disruption question (n = 52)	Did not endorse functional disruption question (n = 57)	χ^2 (1)	
Discussion of behavioral problems	37 (71.2%)	18 (31.6%)	17.037	***
Referral for behavioral treatment	10 (19.2%)	3 (5.3%)	5.051	*
Prescription of psychotropic medications	10 (19.2%)	0 (0.0%)	12.069	**

* $p < .05$. ** $p < .01$. *** $p < .001$
Note. Percentages indicate percentage of participants within each condition.

More patients endorsed the functional disruption question than met diagnostic criteria. A Pearson's chi-square analysis was used to assess whether those who met diagnostic criteria endorsed functional disruption more frequently than those who did not meet criteria. As Table 17 indicates, patients who met diagnostic criteria did endorse functional disruption significantly more frequently than patients who did not meet diagnostic criteria, χ^2 (1) = 9.396, $p < .01$.

Table 17

Chi-square Test of Difference in Endorsement of Functional Disruption Question for Experimental Condition Participants Who Met Diagnostic Criteria on the PHQ and Those Who Did Not

Outcome	Met diagnostic criteria (n = 31)	Did not meet diagnostic criteria (n = 78)	χ^2 (1)
Endorsed functional disruption	22 (71.0%)	30 (38.5%)	9.396 **

** $p < .01$.

Supplemental analyses of the CHQ. Unlike the PHQ, the CHQ has not been previously validated as a diagnostic instrument. However, exploratory analyses regarding patient answers on the CHQ are provided below.

The first question on the CHQ was used to assess others' perceptions of the patient's apparent body weight, adding further information regarding body weight and weight loss to what had been covered on the PHQ. The second and third questions on the CHQ assessed for drug abuse. A patient could be judged to meet diagnostic criteria if he or she had used recreational drugs *and/or* abused prescription drugs and had associated problems with fulfilling life roles (e.g., high at work) through similar criteria to the alcohol abuse question on the PHQ. The fourth question on the CHQ assessed abusive relationships, risky sexual behavior, and confusion regarding sexual values and behaviors. The final question on the CHQ assessed problems related to being away at college: academic problems, relationship problems, roommate problems, overwhelmed by school, financial problems, and homesickness. A total maladjustment score was calculated by summation of the total number of risky sexual behaviors and college-related problems.

As is indicated in Table 18, the most frequently endorsed problems were financial problems (45.0%), feeling overwhelmed by school (33.0%), and the risky sexual behaviors, that is, unprotected sex (27.5%) and sex with multiple partners (34.9%). Additionally, approximately 60% of participants indicated that they were having difficulty with at least one aspect of being at college.

Table 18

Experimental Group Participant Responses to the CHQ

Diagnosis	*n*	%
Have you ever had a time when you weighed much less than other people thought you ought to weigh?		
No	85	78.0
Yes	24	22.0
Drug use		
Meet criteria for drug abuse	4	2.0
Use recreational drugs or abuse prescription medications	17	8.5
Physical or sexual abuse		
Patients forced to have sex against their will	0	0.0
Patients hit, slapped, kicked, choked, or otherwise harmed physically	5	4.6
Engagement in risky sexual behaviors		
Had unprotected sex	30	27.5
Had sex with multiple partners	38	34.9
Number of risky sexual behaviors		

Table 18 (continued)

0	58	53.2
1	17	15.6
2	34	31.2
Patients indicating confusion with regard to sexual values or behaviors		
No	100	91.7
Yes	9	8.3
Frequency of problems related to being at college		
Academic problems	16	14.7
Relationship problems	22	20.2
Roommate trouble	10	9.2
Overwhelmed by school	36	33.0
Financial problems	49	45.0
Number of items endorsed regarding problems with being at college		
0	43	39.4
1	25	22.3
2	21	19.3
3	11	10.1
4	6	5.5
5	3	2.8
Total maladjustment score (combination of risky sexual behaviors and college problems)		
0	26	23.9
1	14	12.8

Table 18 (continued)

2	31	28.4
3	16	14.7
4	13	11.9
5	7	6.4
6	1	0.9
7	1	0.9

The only question on the CHQ that could be used to infer a diagnosis was the question pertaining to drug abuse. However, a statistical analysis of this diagnosis was not possible because of the fact that only four participants met criteria for drug abuse. Instead, a Pearson's chi-square was used to compare participants who used recreational drugs or abused prescription medications (n = 17) to patients who did not. The dependent variables were the discussion of behavioral problems, the referral for behavioral care, and the prescription of psychotropic medications. As Table 19 shows, patients who used drugs were significantly more likely to discuss behavioral problems with their providers (χ^2 (1) = 5.452, $p < .05$) and to be prescribed psychotropic medications (χ^2 (1) = 4.981, $p < .05$) compared to those who did not use drugs.

Table 19

Chi-square Tests of Differences in Discussion of Behavioral Problems, Referrals for Behavioral Care, and Prescription of Psychotropic Medications for Experimental Condition Participants Who Use Recreational Drugs and/or Abuse Prescription Medication and Those Who Do Not

Outcome	Use drugs (n = 17)	Do not use drugs (n = 92)	χ^2 (1)	
Discussion of behavioral problems	13 (76.5%)	42 (45.7%)	5.452	*
Referral for behavioral treatment	2 (11.8%)	11 (12.0%)	0.001	
Prescription of psychotropic medications	4 (23.5%)	6 (6.5%)	4.981	*

* $p < .05$. ** $p < .01$. *** $p < .001$

Note. Percentages indicate percentage of participants within each condition.

High comorbidity is recognized between drug use and psychiatric disorder. A Pearson's chi-square analysis was used to determine whether patients who use drugs meet diagnostic criteria on the PHQ significantly more frequently than those who do not use drugs. Table 20 shows that meeting diagnostic criteria does not occur significantly more frequently with drug use.

Table 20

Chi-square Test of Difference in Meeting Diagnostic Criteria for Experimental Condition Participants Who Use Recreational Drugs and/or Abuse Prescription Medication and Those Who Do Not

Outcome	Use drugs (n = 17)	Do not use drugs (n = 92)	χ^2 (1)
Meet diagnostic criteria	7 (41.2%)	24 (26.1%)	1.605

Supplemental analysis of r*elationship among PHQ-based diagnoses, PHQ functional disruption question, and CHQ maladjustment total.* Three potential decision-making points were identified on the questionnaires: the number of diagnostic criteria met on the PHQ, the patient's endorsement of the functional disruption question on the PHQ, and the total score on the maladjustment portion of the CHQ (questions pertaining to risky sexual behavior and college-adjustment problems). As Table 21 indicates, these three categories were highly correlated, all at the $p < .001$ level.

Table 21

Correlation of Number of Diagnoses on the PHQ, Functional Disruption Rating on the PHQ, and Total Maladjustment Score on the CHQ

Variable	1	2	3
1. Number of PHQ diagnoses	--		
2. Functional disruption (PHQ)	.466 ***	--	
3. Total maladjustment score (CHQ)	.354 ***	.336 ***	--

*** $p < .001$.

Because of the intercorrelation between the variables number of PHQ diagnoses, endorsement of functional disruption, and total maladjustment score, a logistic regression model was used to determine the unique contribution of each variable to the likelihood of discussions of behavioral problems, referrals for behavioral treatment, and prescriptions of psychotropic medications while controlling for the influence of the others.

For the discussion of behavioral problems, the model indicates that a significant main effect was present for endorsement of the functional disruption question and total maladjustment score ($p < .05$). As indicated in Table 22, patients who endorsed the functional disruption question were 3.6 times more likely to be engaged in discussion about behavioral problems than those who did not endorse the functional disruption question. Similarly, patients who indicated the presence of adjustment problems were 1.41 times more likely to be engaged in discussion about behavior problems than those who did not indicate adjustment problems.

For the referral for behavioral treatment, the model indicates that a significant effect was present for total adjustment score ($p < .05$). Table 22 indicates that patients who endorsed the adjustment questions were 1.66 times more likely to be engaged in discussion about behavioral problems than those who did not endorse the adjustment questions.

For the prescription of psychotropic medications, the model indicates that a significant effect was present for endorsement of the functional disruption question ($p < .001$). Table 22 indicates that patients who endorsed the functional disruption question were 8.22 times more likely to be prescribed psychotropic medications those who did not endorse the functional disruption question.

Table 22

Logistic Regression Predicting Discussion of Behavioral Problems, Referral for Behavioral Treatment, and Prescription of Psychotropic Medications

Predictor	β	*SE*	Odds ratio	Wald statistic	
Discussion of behavioral problems					
Functional disruption	1.280	0.392	3.598	10.647	***
Meets diagnostic criteria	0.380	0.417	1.462	0.830	
Total adjustment score	0.346	0.158	1.413	4.802	*
Referrals for behavioral treatment					
Functional disruption	0.775	0.456	2.171	2.890	
Meets diagnostic criteria	-0.225	0.417	0.799	0.290	
Total adjustment score	0.504	0.205	1.655	6.010	*
Prescription of psychotropic medications					
Functional disruption	2.107	0.652	8.222	10.438	***
Meets diagnostic criteria	0.770	0.513	2.159	2.251	
Total adjustment score	0.285	0.281	1.330	1.031	

* $p < .05$. ** $p < .01$. *** $p < .001$

Patient and Provider Satisfaction

Patient Satisfaction: Hypothesis 2

The use of the PHQ and CHQ will increase patients' satisfaction with their primary care visits, as operationalized by higher scores on the satisfaction questionnaires for patients in the experimental group compared to patients in the control group.

To test this hypothesis, patient satisfaction was rated as a continuous variable on a Likert scale from 1 to 7 (7 = *very satisfied*) on the Postvisit Questionnaire. Differences would typically be assessed with an ANOVA. However, the data were grouped at the high end of the scale, indicating a ceiling effect. Of the 200 patients who visited the clinic, 101 rated their satisfaction *7*. The mean satisfaction rating was 6.25 for the experimental condition and 6.29 for the control condition. Data regarding patient satisfaction ratings are presented in Table 23.

Table 23

Descriptive Statistics on Patient Satisfaction

	N	$M \pm SD$	Median	Mode
Entire sample	200	$6.27 \pm .94$	7.00	7
Experimental condition	109	$6.25 \pm .97$	6.00	7
Control condition	91	$6.29 \pm .90$	7.00	7

Although visual inspection indicated that there were no differences, an exploratory ANOVA was conducted with condition (experimental and control) and physician serving as independent variables and patient satisfaction as the dependent variable. The interaction between condition and physician was also examined.

As is indicated in Table 24, no main effects were found for the condition ($F = .235$, $p = .62$), provider ($F = 1.485$, $p = .23$), or the interaction between condition and provider ($F = .243$, $p = .78$).

Table 24

Evaluation of Differences in Patient Satisfaction by Experimental Condition

Source	*df*	*SS*	*MS*	*F*
Condition	1	.208	.208	0.235
Provider	2	2.631	1.315	1.485
Condition x Provider	2	.431	.216	0.243
Error	194	171.896	.886	

Although these findings are interpreted with caution because of the violation of assumptions, on the basis of the ANOVA performed, Hypothesis 2 was not supported.

Patient reaction to use of behavioral questionnaires. Patients in the experimental condition were asked dichotomous questions regarding their opinions about the desirability and usefulness of the PHQ and CHQ. As Table 25 shows, a majority of the patients indicated an interest in the use of the questionnaires. Additionally, the qualitative comments summarized in Appendix 14 indicate further support for use of the questionnaires.

Table 25

Experimental Condition Patient Responses Regarding Use of PHQ-CHQ

	Yes	No
	n (%)	*n (%)*
Did using the questionnaires make it easier for you to talk about your concerns with your physician?	68 (62.4%)	41 (37.6%)
Did using the questionnaires remind you to bring up your concerns during the visit?	60 (55.0%)	49 (45.0%)
Would you like if the doctor or nurse always used the questionnaires when you came to an appointment?	73 (67.0%)	36 (33.0%)

Provider Satisfaction: Hypothesis 3

The use of the PHQ and CHQ will increase medical care providers' satisfaction with their primary care visits. This will be operationalized by the following:

a. Each clinician's satisfaction ratings for the experimental group compared to the control group
b. The clinician's ratings in the summary analysis of their experience of using the questionnaires in patient visits

To test Hypothesis 3a, provider satisfaction was rated as a continuous variable on a Likert scale from 1 to 7 (7 = *very satisfied*) on the Postvisit Questionnaire. Differences would typically be assessed with an ANOVA. However, the data were grouped at the high end of the scale, indicating a ceiling effect. Of the 200 visits, the providers rated 127 at a satisfaction level of *6*. The mean satisfaction rating was 6.04 for the experimental condition

and 5.96 for the control condition. Provider group 1 and Provider 2 rated their experimental condition visits higher, whereas Provider 3 rated the control condition visits higher. Data regarding provider satisfaction ratings are presented in Table 26.

Table 26

Descriptive Statistics on Provider Satisfaction

	Experimental		Control		Total	
	M	SD	M	SD	M	SD
Provider 1	6.11	.37	5.93	.34	6.03	.36
Provider 2	6.23	.73	6.03	.78	6.13	.76
Provider 3	5.47	.90	5.88	1.02	5.66	.97
Total	6.04	.67	5.96	.67	6.00	.66

Despite the limitations described previously, an exploratory ANOVA was conducted with condition (experimental and control) as the independent variable and patient satisfaction as the dependent variable. The interaction between condition and physician was also examined.

As is indicated in Table 27, no main effect was found for the condition (F (1) = .968, $p > .05$), but a main effect was found for provider (F (2) = 5.895, $p < .01$). An interaction between provider and condition was also found, F (2) = 3.013, $p < .05$. The information in Table 27 indicates that this interaction is due to Provider 3's rating control visits higher than experimental visits, whereas the other providers rated the experimental visits higher than the control visits.

Table 27

Evaluation of Differences in Provider Satisfaction by Experimental Condition

Source	*df*	*SS*	*MS*	*F*	
Provider	2	4.848	2.424	5.895	**
Condition	1	2.920 E -03	2.920 E -03	0.007	
Provider x Condition	2	2.478	1.239	3.013	*
Error	187	57.843	0.309		

* $p < .05$. ** $p < .01$. *** $p < .001$

Tukey's HSD was used to further evaluate the differences between providers. As Table 28 shows, Provider 3 was significantly less satisfied with patient visits than were Provider group 1 and Provider 2.

Table 28

Post Hoc Test of Differences in Provider Satisfaction

A	B	Mean difference (A-B)	Std. Error
Provider 1	Provider 2	.10	.10
Provider 1	Provider 3	.37 **	.13
Provider 2	Provider 3	.48 **	.13

* $p < .05$. ** $p < .01$. *** $p < .001$

Although these findings are interpreted with caution because of the violation of assumptions, on the basis of on the ANOVA performed, Hypothesis 3a was not supported.

To test Hypothesis 3b, the seven individual providers' ratings regarding the functional utility of the PHQ and CHQ were analyzed with descriptive statistics. Higher values (maximum 10 points) indicated a favorable view, with the exception of the question regarding additional time needed, in which lower scores indicated that the PHQ-CHQ did not entail a burdensome amount of time (and a higher score indicated that an unacceptable amount of time was required). In recognition that the providers in this study differed greatly in terms of numbers of patients seen (ranging from 2 to 98), the data were also analyzed after a linear transformation, which weighted clinician ratings with respect to the numbers of patients they treated. Table 29 shows that the providers indicated moderately favorable opinions (between 6 and 8 on a 10-point scale) regarding the helpfulness and benefits of the questionnaire, as well as their willingness to use the questionnaire in the future and to employ a behavioral-care specialist. The weighted scores were more favorable, ranging from 8 to 9.5 on the 10-point scale.

Table 29

Provider Ratings of Experience of Using the Questionnaires (n = 7)

	M ± *SD*	Median	Mode	Weighted Mean
How helpful was the PHQ-CHQ in facilitating discussion (1 = not helpful, 10 = very helpful)	7.00 ± 2.38	7.00	7	9.00
How much additional time was required (1 = not a lot of time, 10 = excessive amount of time)	4.43 ± 2.99	4.00	1	4.50
Did the benefits outweigh the additional time (1 = no benefit, 10 = very beneficial)	7.14 ± 3.13	9.00	9	8.74
How willing are you to incorporate the PHQ-CHQ in routine practice (1 = not willing, 10 = very willing)	6.29 ± 2.81	7.00	7	8.28
How willing are you to work with a behavioral care specialist (1 = not willing, 10 = very willing)	8.14 ± 1.95	8.00	10	9.47

Discussion

Summary of Study

This study explored the influence of two behavioral questionnaires on providers' decisions regarding behavioral interventions during medical visits. The mental-health-oriented Patient Health Questionnaire (PHQ) and the college-adjustment-oriented College Health Questionnaire (CHQ) were randomly assigned to approximately 50% of the 200 participant patients at a Midwestern University health center over a three-week period in order to evaluate the influence of these instruments on the making of referrals for behavioral treatment and the prescription of psychotropic medications in primary care. Additional information collected from the patients and their providers allowed for a comprehensive assessment of how the questionnaire and any potential changes affected patient and provider satisfaction.

Results indicated higher rates of discussion of behavioral problems and prescription of psychotropic medications for experimental group participants who received the questionnaires. Within the experimental group, an increase in discussion and the prescription of psychotropic medications occurred for patients who endorsed diagnostic criteria for psychological disorders and for patients who endorsed functional disruption. Participants indicating college adjustment problems engendered increased discussion of behavioral problems and referrals for behavioral treatment.

Patients and providers indicated a high level of satisfaction with all visits regardless of experimental condition. The majority of experimental patients indicated, however, that they found the questionnaire useful in helping to bring up concerns and would like it if their providers used it in future visits. Similarly, the providers indicated that although the

questionnaire may have added somewhat to the demands on their time, using the questionnaire was helpful and beneficial.

Behavioral Interventions

The first hypotheses of this study stated that the experimental condition participants would experience a higher rate of referral for behavioral treatment and a higher rate of prescription of psychotropic medications. The data supported the higher occurrence of prescriptions but not the increase in referrals for behavioral treatment. Additionally, the discussion of behavioral problems increased more than twofold when patients used the questionnaire. Such findings were consistent with previous research, such as a study by Cowan and Morewitz (1995), who stated that college students who answer a psychological questionnaire are more likely to discuss their psychological concerns during their visit to a physician.

Further analyses were conducted in order to better understand the differences in care between the experimental and control conditions. Within the experimental condition, the difference in care for patients who met diagnostic criteria on the PHQ was compared to that for those who did not. Overall, prevalence rates of diagnoses were lower than reported in previous studies. The discussion of behavioral problems and the prescription of psychotropic medications significantly increased for those who met diagnostic criteria. In particular, discussion of behavioral problems and the prescription of psychotropic medications increased significantly for major depression and panic and/or anxiety. This indicates that the providers were significantly more likely to use medications to treat psychopathology. In contrast, diagnosis of alcohol abuse was accompanied by an increase in the discussion of behavioral

problems and referrals for behavioral treatment. Drug use, though, as tracked by the CHQ, revealed higher rates of discussion of behavioral problems and prescription of psychotropic medications. All of the findings indicated that when providers recognized the presence of a problem, they discussed it with their patients and, when deemed necessary, intervened either through the prescription of psychotropic medications or referral for behavioral treatment with a preference for medications.

Interestingly and unexpectedly, powerful indicators of distress emerged in the form of the endorsement of a single functional disruption question on the PHQ and the endorsement of college maladjustment questions on the CHQ. With functional disruption, maladjustment, and the meeting of diagnoses highly intercorrelated, further analyses revealed that of the three methods, the most powerful predictor of discussion of behavioral problems and prescription of psychotropic medications was the PHQ functional disruption question. College maladjustment predicted the discussion of behavioral problems and use of referrals for behavioral treatment. In an era devoted to the development of rapid assessment, the identification of powerful single-question predictors such as the functional disruption question is important.

Unexpectedly, the difference in the rate of psychotropic prescription between the two experimental conditions was substantially higher than the difference in the rate of referrals for behavioral treatment. Providers were significantly more likely to choose psychotropic medications as the treatment of choice for indications of psychopathology, such as the major depression, anxiety, and panic disorders that represented the majority of responses. In contrast, providers were significantly more likely to treat adjustment problems, such as issues related to adjustment to college, with referrals to mental health counselors.

The increased rate of prescription of psychotropic medications is not surprising in a medical environment, where the prescription of medication is a standard form of treatment. Additionally, this might reflect the providers' self-reported uncertainty with regard to behavioral treatment, suggesting that they were more likely to continue with the treatment that was most familiar to them. However, this finding was surprising in consideration of the fact that the free counseling service, staffed by graduate students and licensed psychologists, was colocated directly upstairs within the same building. Literature on integrated care indicates that this serves as a moderate level of integration and should result in some improvement of treatment. (e.g., Blount, 1998). Although this opportunity for psychological intervention existed, a systemic breakdown in the logistics of referral to the counseling service was apparently present.

Regardless of the reason for the limited approach to treatment, such patterns were evident. Research indicates that empirically supported behavioral treatments are effective for the reduction in symptoms of the commonly detected behavioral problems from this study, including major depression, anxiety, and panic (DeRubeis & Crits-Cristoph, 1998). Additionally, Friedman et al. (1995) listed multiple ways in which behavioral treatment can directly improve medical treatment. Therefore, treatment of behavioral problems in this college healthcare setting appears limited to one effective treatment method while excluding other appropriate treatments.

The increase in discussion of behavioral problems for the experimental condition highlights the fact that behavioral problems appear to be insufficiently explored in standard university healthcare practice. This is particularly clear when one considers that the increase in discussion was accompanied by an increase in treatment. It appears, however, that the

current healthcare model's limitations on the duration of medical visits prohibits the provider from addressing all areas of patient health, revealing that a systems issue may be highly influential in dictating the current level of behavioral care. Coupled with the providers' indications in their provider self-ratings that they have only moderate confidence in their training and ability to provide behavioral care, it should not be surprising that behavioral concerns are not sufficiently addressed in regular practice. Blount (1998) indicated that providers may also view problems from a physiological rather than psychological perspective or may feel that asking about behavioral problems has the potential to drain the provider's time heavily.

Curiously, patients in this sample indicated far lower prevalence rates of psychiatric disorders than was reported in nationwide studies. The rates were often less than 50% of reported rates; surprisingly for a young adult sample, no patients endorsed the presence of bulimia. This may be the result of a variety of factors, including social desirability and discomfort in reporting certain problems to the clinician. Additionally, the PHQ requires the indication of severe symptoms to indicate pathology, whereas many participants in this study indicated more moderate levels of symptoms. Whatever the reason for the patients' low reports, clinicians should be concerned with the suspiciously low rates of endorsement of psychopathology.

Although the patients appeared to be indicating problems at a particularly low rate, the providers were often choosing not to treat patients who actually met criteria. Providers discussed behavioral problems with approximately 70% of the patients who met criteria on the PHQ and either prescribed medications or referred less than 50% of the patients who met criteria. Although this study highlighted the preferred treatment patterns of providers for

various behavioral problems, in reality, the most frequent treatment was to do nothing. Again, this suggests a logistical problem in the research site, as the presence of a colocated psychology clinic should have facilitated the referral for behavioral care of at least all patients who meet criteria.

Patient and Provider Satisfaction

Consistent with previous literature on patient and provider satisfaction (Larsen et al., 1979), a majority of patients in this study used the higher end of the satisfaction rating scale, producing a ceiling effect, resulting in almost identical visit satisfaction ratings across experimental and control conditions.

However, additional data collected regarding patient and provider satisfaction in regard to using the questionnaire revealed important findings. The experimental group patients indicated at a rate of almost two to one that the questionnaire helped them bring up their concerns and that they would like it if the provider always used this questionnaire. Additionally, over half of the experimental group patients said that the questionnaire reminded them to bring up their concerns. The patient ratings provide further support for the increase in the discussion of behavioral problems, referrals for behavioral treatment, and prescription of psychotropic medications for those who received the questionnaire.

The providers were similarly pleased with the questionnaire, indicating that it was helpful in their treatment of the patients. They rated their satisfaction as high on all domains related to the questionnaire and its usefulness and the future integration of behavioral care. However, they did indicate that they were less satisfied with the amount of time that was required to use this questionnaire. With this in mind, it is imperative to find a way to

improve behavioral treatment in medical care without increasing the demands on providers' time.

Implications for Integrated Care

The patterns of care found in this study are consistent with the concerns that instigated the integrated care movement in primary care: many behavioral problems are not being recognized or treated, nor are all forms of treatment for behavioral problems being utilized; patients and providers are indicating a desire to better address these problems; providers are concerned about the time required for them to participate in behavioral treatments and indicate that they feel only moderately qualified to provide behavioral treatment. The response to these problems in the general primary care population was the creation of integrated care, that is, the inclusion of a behavioral healthcare specialist in the medical care setting (Strosahl, 1996, 1998). This study provides empirical evidence that a need for a similar intervention is present in the university healthcare setting, representing perhaps the most important implication resulting from the present study.

Extrapolating from this, the implementation of integrated care has the potential of saving the university costs through both better student health and retention of students. As noted in previous literature, students with mental health disorders account for approximately 50% of the withdrawals from school annually (Meilman et al., 1992). The university at which this study was conducted has already seen the benefits of implementing a Counselor in Residence program, providing behavioral services in the student dorms. This gives reason to infer that intervening with students in the medical setting, where students are clearly presenting with behavioral problems, could provide similarly positive results.

Limitations

The present study served as a preliminary investigation of behavioral care in the college and university healthcare setting. However, the study did have four limitations, including problems with sampling of male participants, research locale, assessment of the psychological status of control group participants, and the use of the CHQ.

First, male participants declined to participate in the experimental condition. Clinic staff reported that many males returned the questionnaire unanswered, complaining of its length or asking for an incentive for participation. Recognizing the sampling problem, the researchers concluded the study by recruiting 20 male experimental group participants to correct for the disparity. It is unclear whether the males did not want to share this information with their provider or if the length of the questionnaire discouraged them from answering. Regardless, it appears that this is not the best method for attaining behavioral information from male patients in a university health clinic.

Second, in a single-site study, the participants are only representative of patients and providers at the university health clinic at one institution. Although the results have the potential to be indicative of the population at large at this institution, conclusions regarding college students nationwide can not be made. This is particularly true in consideration of the fact that students at this institution must pay for their medical care. Additionally, because of the fact that many students commute to school or are originally from nearby cities, there is a high potential for students to seek care from outside providers covered under family insurance plans. Such factors limit the generalizability of the findings.

Third, the PHQ and CHQ battery that was given to experimental group participants served as the only behavioral assessment instrument; therefore, no data were obtained

regarding the behavioral status of control participants. Additionally, the single assessment modality prohibited the researchers from being able to assess the sensitivity and specificity of the instrument. These limitations prevented proper assessment of the similarities and differences between the experimental and control groups.

Finally, although the CHQ is an innovative questionnaire filling a partial void left by existing college questionnaires, the CHQ was used in this study without pre-established psychometrics. Future research could focus on investigating the psychometrics of this questionnaire and refining it for future use.

Strengths

Although the limitations prevented certain conclusions from being made, they did not prohibit the study from serving its intended purposes as an exploration of the need for behavioral health care in a university health clinic and a demonstration of the feasibility of incorporating integrated care into the university healthcare system.

The PHQ, as a validated mental health questionnaire typically used in general primary care, proved to be useful in promoting increases in behavioral care in the university health clinic as well. This included the identification of one question, regarding functional disruption, as a predictor of the need for behavioral interventions. The CHQ, which was developed by the researchers to address important college-related factors that were not addressed by the PHQ, proved to be similarly effective. The indication of college maladjustment served as a predictor of the need for behavioral interventions. Thus, both the PHQ and CHQ could serve as valuable additions to college health care or may serve as the

foundation for the development of a questionnaire specific to the behavioral needs of the college population.

The present study was ground-breaking, as, to the best of our knowledge, the exploration of behavioral health care in university health clinics has not been researched previously. It is likely that this is at least partly due to the difficulty in performing such studies. To complete research in the medical field, a psychologist must do a significant amount of groundwork to work in this nontraditional setting and carry out the study. The time and organizational elements of this research would undoubtedly discourage many from pursuing such projects. However, the study was quite beneficial, as the data revealed that the potential exists for improvements in awareness of behavioral problems. Experimental-group patients who presented their provider with four pages of answers regarding behavioral concerns received substantially different behavioral care than did patients treated with standard care procedures. The recognition of this difference carries the potential of instigating a significant change in the treatment of behavioral problems of college health center patients.

One way that this may occur is through integrated care. The providers and patients indicated that the increased attention to behavioral problems was helpful and something that they would like to continue to have in the future. In addition, providers indicated that they would like to collaborate with an in-house behavioral specialist. Given that the integrated-care model could help to improve behavioral awareness, would provide the structure for including a psychologist in regular medical practice, and would reduce the time commitment that providers indicated was problematic, the results of this study showed that the university health community is a potential new home for integrated care.

Future Research

Because this was an exploration of an area not previously researched, more questions were developed than answered. The results indicated that research could take a variety of avenues, including research on college patients, medical-care providers at university health clinics, and the implementation of an integrated-care type of approach in a university health clinic.

Although college students are a heavily researched population in general, a variety of questions remain unanswered regarding college-student behavior during medical visits. This study revealed a highly significant increase in the discussion of behavioral problems during medical visits for the experimental group. Social validation of this finding was shown by the significant patient endorsement of the further use of a behavioral questionnaire as a regular part of medical practice. Does this indicate that college-student patients do not feel comfortable bringing up behavioral concerns with their physicians without an invitation? Or is it that they forget to ask? If one is interested in the further development of behavioral treatment methods for college students, it seems that such questions must be answered.

Similarly, what are the factors that influenced the increase in discussion from the providers' perspectives? Did the questionnaire serve as a primer? Did it reveal information that never would have been found through questioning? Did it serve as an *expert opinion* for providers who felt uncertain about their abilities to properly assess behavioral concerns? Additionally, further research is necessary on the decisions made in regard to the information gained. How and why did the providers decide to make referrals or prescribe psychotropic

medications? Furthermore, when referrals or medications were warranted, why did the provider choose one treatment method over the other?

The fact that integrated care in the community primary-care setting has demonstrated success in improving care for patients provided the momentum for the current study into the possibility of applying the integrated care model to the college population as well. Because the results of this study indicated that there are more behavioral problems to be, at minimum, discussed than are normally addressed through treatment as usual, further research should explore the ways that psychologists could contribute to improving care. Clearly, the intricacies and complexities involved in implementing integrated care in the college healthcare setting provide fertile ground for future investigation.

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APPENDICES

Appendix A: Patient Health Questionnaire

Patient Health Questionnaire

This questionnaire is an important part of providing you with the best health care possible. Your answers will help in understanding problems that you may have. Please answer every question to the best of your ability unless you are requested to skip over a question.

1. **During the last 4 weeks, how much have you been bothered by any of the following problems?**	**Not bothered**	**Bothered a little**	**Bothered a lot**
a. Stomach pain	☐	☐	☐
b. Back pain	☐	☐	☐
c. Pain in your arms, legs, or joints (knees, hips, etc.)	☐	☐	☐
d. Menstrual cramps or other problems with your periods	☐	☐	☐
e. Pain or problems during sexual intercourse	☐	☐	☐
f. Headaches	☐	☐	☐
g. Chest pain	☐	☐	☐
h. Dizziness	☐	☐	☐
i. Fainting spells	☐	☐	☐
j. Feeling your heart pound or race	☐	☐	☐
k. Shortness of breath	☐	☐	☐
l. Constipation, loose bowels, or diarrhea	☐	☐	☐
m. Nausea, gas, or indigestion	☐	☐	☐

2. **Over the last 2 weeks, how often have you been bothered by any of the following problems?**	**Not at all**	**Several days**	**More than half the days**	**Nearly every day**
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	☐	☐	☐	☐

FOR OFFICE CODING: Som Dis if at least 3 of #1a-m are “a lot” and lack an adequate biol explanation.
Maj Dep Syn if answers to #2a or b and five or more of #2a-i are at least “More than half the days” (count #2i if present at all).
Other Dep Syn if #2a or b and two, three, or four of #2a-i are at least “More than half the days” (count #2i if present at all).
[1]

3. Questions about anxiety.

		NO	YES
a.	In the last 4 weeks, have you had an anxiety attack — suddenly feeling fear or panic?……..	☐	☐
If you checked "NO", go to question #5.			
b.	Has this ever happened before?……	☐	☐
c.	Do some of these attacks come suddenly out of the blue — that is, in situations where you don't expect to be nervous or uncomfortable?……	☐	☐
d.	Do these attacks bother you a lot or are you worried about having another attack?……..….	☐	☐

4. Think about your last bad anxiety attack.		**NO**	**YES**
a.	Were you short of breath?……	☐	☐
b.	Did your heart race, pound, or skip?……...	☐	☐
c.	Did you have chest pain or pressure?…….	☐	☐
d.	Did you sweat?……	☐	☐
e.	Did you feel as if you were choking?……..	☐	☐
f.	Did you have hot flashes or chills?…….	☐	☐
g.	Did you have nausea or an upset stomach, or the feeling that you were going to have diarrhea?……	☐	☐
h.	Did you feel dizzy, unsteady, or faint?…….	☐	☐
i.	Did you have tingling or numbness in parts of your body?…	☐	☐
j.	Did you tremble or shake?……..…	☐	☐
k.	Were you afraid you were dying?…….	☐	☐

5. Over the last 4 weeks, how often have you been bothered by any of the following problems?		**Not at all**	**Several days**	**More than half the days**
a.	Feeling nervous, anxious, on edge, or worrying a lot about different things.…….	☐	☐	☐
If you checked "Not at all", go to question #6.				
b.	Feeling restless so that it is hard to sit still……..	☐	☐	☐
c.	Getting tired very easily……..	☐	☐	☐
d.	Muscle tension, aches, or soreness……	☐	☐	☐
e.	Trouble falling asleep or staying asleep……	☐	☐	☐
f.	Trouble concentrating on things, such as reading a book or watching TV…….	☐	☐	☐
g.	Becoming easily annoyed or irritable…….	☐	☐	☐

FOR OFFICE CODING: Pan Syn if all of #3a-d are 'YES' and four or more of #4a-k are 'YES'.
Other Anx Syn if #5a and answers to three or more of #5b-g are "More than half the days".

6. Questions about eating.

		NO	YES
a.	Do you often feel that you can't control what or how much you eat?……..	☐	☐
b.	Do you often eat, within any 2-hour period, what most people would regard as an unusually large amount of food?…….…	☐	☐

If you checked 'NO' to either #a or #b, go to question #9.

c.	Has this been as often, on average, as twice a week for the last 3 months? ……..	☐	☐

7. In the last 3 months have you often done any of the following in order to avoid gaining weight ?

		NO	YES
a.	Made yourself vomit? ……..	☐	☐
b.	Took more than twice the recommended dose of laxatives?……	☐	☐
c.	Fasted — not eaten anything at all for at least 24 hours?……	☐	☐
d.	Exercised for more than an hour specifically to avoid gaining weight after binge eating?…	☐	☐

		NO	YES
8.	**If you checked ' YES' to any of these ways of avoiding gaining weight, were any as often, on average, as twice a week?……**	☐	☐
9.	**Do you ever drink alcohol (including beer or wine)?**……	☐	☐

If you checked "NO" go to question #11.

10. Have any of the following happened to you more than once in the last 6 months?

		NO	YES
a.	You drank alcohol even though a doctor suggested that you stop drinking because of a problem with your health…….	☐	☐
b.	You drank alcohol, were high from alcohol, or hung over while you were working, going to school, or taking care of children or other responsibilities…….	☐	☐
c.	You missed or were late for work, school, or other activities because you were drinking or hung over……	☐	☐
d.	You had a problem getting along with other people while you were drinking……..…	☐	☐
e.	You drove a car after having several drinks or after drinking too much…….……	☐	☐

11. If you checked off any problems on this questionnaire, 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?

Not difficult at all	Somewhat difficult	Very difficult	Extremely difficult
☐	☐	☐	☐

FOR OFFICE CODING: Bul Ner if #6a,b, and-c and #8 are all 'YES'; Bin Eat Dis the same but #8 either 'NO' or left blank. Alc Abu if any of #10a-e is 'YES'.

Developed by Drs. Robert L. Spitzer, Janet B.W. Williams, Kurt Kroenke and colleagues, with an educational grant from Pfizer Inc.
For research information, contact Dr. Spitzer at rls8@columbia.edu. The names PRIME-MD® and PRIME-MD TODAY® are trademarks of Pfizer Inc.

Appendix B: Permission for Use of Patient Health Questionnaire

Kurt Kroenke <kkroenke@regenstrief.org> **Sun, Nov 14, 2004 at 4:09 PM**
To: kalschul@gmail.com
Cc: Robert Spitzer <rls8@columbia.edu>, Donna Fadden <dfadden@regenstrief.org>
The version we currently recommend is the entirely self-administered version of the original PRIME-MD, known as the Patient Health Questionnaire (PHQ). Attached is a document with copies of the instrument plus instructions. It is free to use for clinical or research purposes, as you request below.

Robert Spitzer wrote:

Robert L. Spitzer, M.D.
Professor of Psychiatry
New York State Psychiatric Institute
Unit 60
1051 Riverside Drive
New York City, NY, 10533

Tel: 212-543-5524
Email: RLS8@Columbia.edu
----- Original Message -----
From: Kevin Alschuler
To: rls8@columbia.edu
Sent: Friday, November 12, 2004 7:43 PM
Subject: PRIME-MD

Dr. Spitzer -

I am a Doctoral Fellow for Clinical Psychology at Eastern Michigan University. My professor, Dr. Flora Hoodin, and I are working on an integrated care model for use at our student health center (Snow Health Center). After reading your articles, we are interested in possibly purchasing either the original PRIME-MD (PQ and CEG) or the PHQ version for use in our project.

Your article "Validation and Utility of a Self-report Version of PRIME-MD" has a note that we can get complimentary PHQ materials from you. Please let me know what I need to do to receive materials for both the original PRIME-MD and the PHQ version.

Thank you,
Kevin Alschuler
--
Kevin Alschuler
kalschul@gmail.com
http://people.emich.edu/kalschul
133 Edenwood Drive #107
Ann Arbor, MI 48103
(734) 657-4843

--

Kurt Kroenke, MD

Professor of Medicine and Research Scientist

Regenstrief Institute, 6th Floor

1050 Wishard Blvd

Indianapolis, IN 46202

Ph 317-630-7447 (Donna Fadden)

Fax 317-630-6611

Appendix C: EMU College Health Questionnaire

EMU College Health Questionnaire

	NO	YES
1. Have you ever had a time when you weighed much less than other people thought you ought to weigh? ……	☐	☐
2. Questions about drug use:	**NO**	**YES**
a. Do you ever use recreational drugs?	☐	☐
b. Do you ever use prescription drugs above their prescribed amount?	☐	☐

If you checked "NO" on 2a AND 2b, go to question #4.

3. Have any of the following happened to you <u>more than once in the last 6 months</u>?	**NO**	**YES**
a. You used drugs, were high from drugs, or were coming down from a high while you were working, going to school, or taking care of children or other responsibilities.……	☐	☐
b. You missed or were late for work, school, or other activities because you were using drugs or recovering from use.……	☐	☐
c. You had a problem getting along with other people while you were using drugs……	☐	☐
d. You drove a car after becoming high off of drugs……	☐	☐
4. Questions about your relationships and sexual habits……	**NO**	**YES**
a. Within the past year, have you been forced to have sexual contact when you did not want to?.....	☐	☐
b. Within the past year, have you been hit, slapped, kicked, choked, or otherwise physically hurt?.....	☐	☐
c. Do you engage in unprotected sex? …….	☐	☐
d. Have you had sex with multiple partners?……	☐	☐
e. Have you been bothered by confusion over values or behavior with regard to your sexuality?……	☐	☐
5. Questions about being at college……	**NO**	**YES**
a. Are you having academic problems?.....	☐	☐
b. Are you having relationship problems?.....	☐	☐
c. Are you having roommate trouble?.....	☐	☐
d. Are you feeling overwhelmed by school?……	☐	☐
e. Are you having financial problems?.....	☐	☐
f. Are you feeling uncomfortable about living away from home?	☐	☐

Appendix D: Medical Care Provider Informed Consent

Informed Consent to Participate in Research

The Usefulness of Questionnaires About Behavioral Issues: Investigating the PHQ-CHQ at a University Health Clinic

Investigators: Kevin Alschuler, B.A. and Flora Hoodin, Ph.D.
Department of Psychology
Eastern Michigan University

You are being invited to participate in a research study evaluating the utility of a questionnaire about your patients' behavioral issues.

What will you be asked to do? We will ask you to do the following:

(1) *Before* the period of data collection from patients begins, fill out an 8-item questionnaire regarding your background in treating psychological problems (which should take approximately 2 minutes).
(2) *During* the period of data collection from patients:
    a. review a completed psychological questionnaire from approximately half of your patients which should take 2-3 minutes per patient, and which you can use as you wish during the appointment;
    b. complete a 5-item post-visit questionnaire after each patient's appointment (which should take approximately 1 minute).
(3) *After* the period of data collection from patients ends, fill out a 5-item summary questionnaire about this research project (which should take approximately 2 minutes).

Who is conducting the research? This research is a Master's Thesis being conducted by Kevin Alschuler, who is a graduate student in the Clinical Psychology doctoral program at Eastern Michigan University. He is working under the supervision of Flora Hoodin, Ph.D., who is an Associate Professor of Psychology at Eastern Michigan University.

What do we hope to find out? We hope to understand more about the psychological problems of patients at the University Health Service.

Who can take part? Any physician, resident, or nurse practitioner who sees patients at University Health Services.

How will your privacy and confidentiality be respected? The primary investigator will be the only person who knows your responses to the questionnaires. Those responses will be recorded in a database with a unique code, not your name. Individual responses will not be shared with your employers or colleagues for any reason.

Do you have to participate? What if you decide to withdraw? You do not have to take part in this study. If you do participate, you may withdraw at any time with no penalty to you. Your participation is strictly voluntary and will not influence your employment at University Health Services in any way.

What's in it for you and others? A possible benefit is that you may be given access to information about your patients that you might not otherwise have received. Additionally, this study will provide information about the potential value of using a questionnaire like the PHQ-CHQ in this setting.

Are there any potential risks to you for participating in this study? There are no foreseeable risks to you or your patients.

What will be done with the information you give? Information you provide as a result of participating in this study will be entered into a statistical software package for analysis. The information will be coded by a unique research identification number and your name will never be associated with the data. The research in this study will be presented to a committee in the Eastern Michigan University Department of Psychology as part of the Masters Thesis process. Additionally, results may be published in psychological journals and presented at professional conferences.

Whom should you contact if you have questions about your rights as a research participant? You may contact the Chair of the Eastern Michigan University Psychology Department's Human Subjects Review Committee, Dr. Karen Saules, at 734/487-4987.

Whom should you contact if you have questions about this study? You may call Kevin Alschuler at 734/487-4987 or the Thesis Committee Chair, Dr. Hoodin, at the Eastern Michigan University Department of Psychology, 734/487-1155. Additionally, you may email Kevin Alschuler at kalschul@emich.edu, or Dr. Hoodin at fhoodin@emich.edu.

What should you do next? If you feel that you have enough information to make your decision and agree to the above terms, please sign below. Your signature indicates that you understand the information above and consent to participate in this study.

_____ _____

Signature of Participant Date

_____

Printed Name of Participant

_____ _____

Signature of Research Assistant/Investigator Date

Appendix E: Provider Background Information Questionnaire

Physician Background Information Questionnaire

Please answer the following questions regarding your experience treating children and families. When you are finished, please initial at the bottom of the page.

1. What is your gender? ☐ **Male** ☐ **Female**

2. Are you a (circle one) medical doctor or nurse practitioner?

3. What is your ethnic background (check all that apply):

- ☐ **White**
- ☐ **Black or African American**
- ☐ **Spanish/Hispanic/Latino**
- ☐ **Asian/East Indian/Pacific Islander**
- ☐ **Native American Indian/Alaskan Native**
- ☐ **Middle Eastern**
- ☐ **Biracial**
- ☐ **Other: _____**

4. How long have you been treating college students? _____ years

5. How comfortable do you feel providing advice or guidance to students regarding behavioral problems?

1-----2-----3-----4-----5-----6-----7-----8-----9-----10
not at all — moderately comfortable — very comfortable

6. How much training did you have in behavioral care?

1-----2-----3-----4-----5-----6-----7-----8-----9-----10
not very much — sufficient — in excess

7. Do you feel that you have adequate training in this area?

1-----2-----3-----4-----5-----6-----7-----8-----9-----10
not at all — sufficiently adequate — very much so

8. How adequate is your knowledge of local behavioral care resources for college students?

1-----2-----3-----4-----5-----6-----7-----8-----9-----10
not at all — sufficiently adequate — very much so

_____ **Your Initials**

Appendix F: Postvisit Provider Questionnaire (Experimental Condition)

Post-visit Physician Questionnaire

Please answer the following questions with regard to the visit you just completed. When you are finished, please initial at the bottom.

	No	Yes
1. **Were mental/emotional/behavioral problems discussed during the visit?**	☐	☐

	No	Yes
2. **Was the client referred for behavioral help?**	☐	☐

If so, who were they referred to?

- Psychologist/EMU Psych Clinic ☐
- Psychiatrist onsite ☐
- Psychiatrist offsite ☐
- Counselor/Snow Counseling Services ☐
- Other ☐

Who/where: _____

	No	Yes
3. **Were psychiatric medications prescribed**	☐	☐

	No	Yes
4. **Did the PHQ-CHQ have any impact on the intervention you did or referrals you made during the visit?**	☐	☐

5. **How satisfied were you with the visit overall?**

1 ---------- 2 ---------- 3 ---------- 4 ---------- 5 ---------- 6 ---------- 7

Not at all satisfied — *Fairly satisfied* — *Very satisfied*

_____ **Your Initials**

Appendix G: Postvisit Provider Questionnaire (Control Condition)

Post-visit Physician Questionnaire

Please answer the following questions with regard to the visit you just completed. When you are finished, please initial at the bottom.

	No	Yes
1. **Were mental/emotional/behavioral problems discussed during the visit?**	☐	☐

	No	Yes
2. **Was the client referred for behavioral help?**	☐	☐

If so, who were they referred to?

- Psychologist/EMU Psych Clinic ☐
- Psychiatrist onsite ☐
- Psychiatrist offsite ☐
- Counselor/Snow Counseling Services ☐
- Other ☐

Who/where: _____

	No	Yes
3. **Were psychiatric medications prescribed**	☐	☐

4. **How satisfied were you with the visit overall?**

1 ---------- 2 ---------- 3 ---------- 4 ---------- 5 ---------- 6 ---------- 7

Not at all satisfied — *Fairly satisfied* — *Very satisfied*

_____ **Your Initials**

Appendix H: Summary Analysis of PHQ-CHQ

Summary Analysis of PHQ-CHQ

Please answer the following questions regarding your experience treating college students. When you are finished, please initial at the bottom of the page.

1. **How helpful was the PHQ-CHQ useful in facilitating discussion between you and your patients about behavioral problems and concerns?**

1-----2-----3-----4-----5-----6-----7-----8-----9-----10
not at all — moderately helpful — very helpful

2. **How much additional time and effort was required of you as a clinician to use the PHQ-CHQ?**

1-----2-----3-----4-----5-----6-----7-----8-----9-----10
not much at all — a moderate amount — an excessive amount

3. **In your opinion, did the benefits of using the PHQ-CHQ outweigh the additional time and effort?**

1-----2-----3-----4-----5-----6-----7-----8-----9-----10
no not at all — uncertain — yes, definitely

4. **How willing would you be to incorporate the PHQ-CHQ into routine clinical practice?**

1-----2-----3-----4-----5-----6-----7-----8-----9-----10
not at all willing — uncertain — very willing

5. **How willing would you be to work with a behavioral care specialist as an on-site consultant to your practice, if this model was financially viable?**

1-----2-----3-----4-----5-----6-----7-----8-----9-----10
not at all willing — uncertain — very willing

_____ **Your Initials**

Appendix I: Patient Invitation to Participate in Research (Experimental Condition)

INVITATION TO PARTICIPATE IN RESEARCH

Dear Patient:

Our office is participating in a research study being conducted at Eastern Michigan University to help bring you and your medical care provider a more useful and satisfying experience. You may find benefits in from this study through providing information to your physician that they might not otherwise have received. Additionally, this study may provide a basis for improvement of medical care in general. There are no foreseeable risks to you for participating this study.

We would like you to help us by completing the attached questions and giving this form to the medical care provider during your visit. It should only take a few minutes to complete. After your visit, we will ask you to answer a few more questions to see if you thought the form was helpful. **If you have already completed the form this week, please do not fill it out again.**

Only the medical care provider will know how you answered the questions when you share them. Other than that, your answers are completely confidential and anonymous. The results of the study will be published in professional journals or presented at professional conferences in group format only without any personally identifying information.

Participating is completely voluntary. If you do not want to participate, you do not have to and it will not affect your care in any way. Just put this questionnaire in the box in the exam room.

THANK YOU FOR YOUR HELP.

This research protocol has been reviewed and approved by the Eastern Michigan University Psychology Department's Human Subjects Review Committee and if you have any questions on the approval process, please contact Dr. Karen Saules at 734-487-4987.

If you have any questions or concerns regarding this study, we urge you to contact the investigators, Dr. Flora Hoodin (734-487-0123) and Kevin Alschuler (734-487-4987).

Appendix J: Patient Invitation to Participate in Research (Control Condition)

INVITATION TO PARTICIPATE IN RESEARCH

Dear Patient:

Our office is participating in a research study being conducted at Eastern Michigan University to help bring you and your medical care provider a more useful and satisfying experience. You may find benefits in from this study through providing information to your physician that they might not otherwise have received. Additionally, this study may provide a basis for improvement of medical care in general. There are no foreseeable risks to you for participating this study.

We would like you to help us by completing the attached questions and giving this form to the medical care provider during your visit. It should only take a few minutes to complete. After your visit, we will ask you to answer a few more questions about your visit.

Your answers are completely confidential and anonymous. The results of the study will be published in professional journals or presented at professional conferences in group format only without any personally identifying information.

Participating is completely voluntary. If you do not want to participate, you do not have to and it will not affect your care in any way. Just put this questionnaire in the box in the exam room.

THANK YOU FOR YOUR HELP.

This research protocol has been reviewed and approved by the Eastern Michigan University Psychology Department's Human Subjects Review Committee and if you have any questions on the approval process, please contact Dr. Karen Saules at 734-487-4987.

If you have any questions or concerns regarding this study, we urge you to contact the investigators, Dr. Flora Hoodin (734-487-0123) and Kevin Alschuler (734-487-4987).

Appendix K: Patient Background Information

Background Information

Please answer the questions below.

1. **Your gender:** ☐ **Male** ☐ **Female**

2. **Your age:** _____ **years**

3. **Your ethnic background (check all that apply):**

   ☐ **White**
   ☐ **Spanish/Hispanic/Latino**
   ☐ **Native American Indian/Alaskan Native**
   ☐ **Biracial**
   ☐ **Black or African American**
   ☐ **Asian/East Indian/Pacific Islander**
   ☐ **Middle Eastern**
   ☐ **Other:** _____

4. **Which language(s) is(are) your primary language?**
   _____

5. **Why are you at the doctor's office today?**
   ☐ **I am sick. Please explain:** _____
   ☐ **I was hurt or injured. Please explain:** _____
   ☐ **I feel depressed or anxious. Please explain:**
   _____
   ☐ **For a follow-up appointment from when I was sick or injured.**
   ☐ **To get a physical**
   ☐ **Women's annual**
   ☐ **Other. Please explain:** _____

6. **How many visits have you had to a physician in the past 6 months?**
   _____

Appendix L: Postvisit Patient Questionnaire (Experimental Condition)

Post-visit Patient Questionnaire

Please answer the following questions with regard to the visit you just completed. Your answers will be completely confidential. Your doctor will *not* see your answers.

	No	Yes
1. Did the doctor or nurse-clinician give you any advice or suggestions about behavioral or emotional problems during the visit?	☐	☐
2. Did the doctor or nurse recommend that you see someone such as a psychologist, counselor, social worker, or psychiatrist during the visit?	☐	☐
If so, do you plan to follow up on this recommendation?	☐	☐
3. Did using the blue questionnaires make it easier for you to talk about your concerns with your physician?	☐	☐
4. Did using the blue questionnaires remind you to bring up your concerns during the visit?	☐	☐
5. Would you like if the doctor or nurse always used the blue questionnaires when you came to an appointment?	☐	☐

6. How satisfied were you with the visit overall?

1 ---------- 2 ---------- 3 ---------- 4 ---------- 5 ---------- 6 ---------- 7

Not at all satisfied *Fairly satisfied* *Very satisfied*

7. Is there anything else you would like us to know about your opinion of this form?

_____

_____

_____

Appendix M: Postvisit Patient Questionnaire (Control Condition)

Post-visit Patient Questionnaire

Please answer the following questions with regard to the visit you just completed. Your answers will be completely confidential. Your doctor will *not* see your answers.

	No	Yes
1. Did the doctor or nurse-clinician give you any advice or suggestions about behavioral or emotional problems during the visit?	☐	☐
2. Did the doctor or nurse recommend that you see someone such as a psychologist, counselor, social worker, or psychiatrist during the visit?	☐	☐
If so, do you plan to follow up on this recommendation?	☐	☐

3. How satisfied were you with the visit overall?

1 ---------- 2 ---------- 3 ---------- 4 ---------- 5 ---------- 6 ---------- 7

Not at all satisfied *Fairly satisfied* *Very satisfied*

4. Is there anything else you would like us to know about your visit?

_____

_____

_____

Appendix N: Patient Postvisit Comments

Comments regarding PHQ-CHQ questionnaires

Problem: Medication refills **Gender:** Male
Received questionnaire? Yes **Satisfaction rating:** 7
Comment: Useful, good idea! Keep them!

Problem: Sinus infection **Gender:** Female
Received questionnaire? Yes **Satisfaction rating:** 7
Comment: Most of it was NA for me, but it couldn't hurt to ask questions for people who may have issues.

Problem: Bladder **Gender:** Female
Received questionnaire? Yes **Satisfaction rating:** 7
Comment: I think the questionnaires are intrusive and leading. Maybe rewrite them to be more compassionate.

Problem: Flu **Gender:** Female
Received questionnaire? Yes **Satisfaction rating:** 6
Comment: If you just have a cold/strep this form doesn't do a whole lot. If you are coming to talk about emotional problems or more sever problems, this form may help.

Problem: Sinus infection **Gender:** Female
Received questionnaire? Yes **Satisfaction rating:** 7
Comment: Good idea. It would be a way for someone suffering with any of those problems to get help.

Problem: Stomach pains **Gender:** Female
Received questionnaire? No **Satisfaction rating:** 6
Comment: I already see a counselor and psychiatrist so there would have been no reason for her to suggest it.

Problem: Women's annual **Gender:** Female
Received questionnaire? Yes **Satisfaction rating:** 6
Comment: This form made the exam easier and made communications with the doctor much easier.

Comments regarding general care

Problem: Sore throat **Gender:** Female
Received questionnaire? No **Satisfaction rating:** 7
Comment: Always very helpful. Very fast friendly service today.

Problem: Health awareness **Gender:** Male
Received questionnaire? No **Satisfaction rating:** 7
Comment: Felt very comfortable during visit

Problem: Sinus problems **Gender:** Female
Received questionnaire? No **Satisfaction rating:** 7
Comment: The doctor was very knowledgeable and compassionate.

Problem: Ingrown toenail **Gender:** Male
Received questionnaire? Yes **Satisfaction rating:** 6
Comment: Dr. [Provider 3] is the best!

Problem: N/A **Gender:** N/A
Received questionnaire? Yes **Satisfaction rating:** 7
Comment: I appreciated all the pamphlets available.

Problem: Physical **Gender:** Female
Received questionnaire? Yes **Satisfaction rating:** 7
Comment: I had a great apt!

Problem: Sore throat **Gender:** Female
Received questionnaire? No **Satisfaction rating:** 6
Comment: The building is really cold.

Problem: UTI **Gender:** Female
Received questionnaire? Yes **Satisfaction rating:** 7
Comment: Friendly, compassionate, attentive service!

Problem: Prescription refill **Gender:** Male
Received questionnaire? Yes **Satisfaction rating:** 7
Comment: I thought the staff here were very friendly and attentive to my care and needs. Thank you and god bless!

Problem: Follow-up **Gender:** Female
Received questionnaire? No **Satisfaction rating:** 7
Comment: Pleasant staff. Great doctors; very concerned.

Problem: Prescription refill **Gender:** Male
Received questionnaire? No **Satisfaction rating:** 7
Comment: Friendly, understood what I was looking to do. THANKS!!

Problem: Cold **Gender:** Male
Received questionnaire? No **Satisfaction rating:** 7
Comment: Everyone was very kind, polite, and helpful!

Problem: STD check **Gender:** Male

Received questionnaire? No **Satisfaction rating:** 7
Comment: Everyone was very nice

Problem: Sore throat **Gender:** Female
Received questionnaire? No **Satisfaction rating:** 7
Comment: Seemed very rushed, but was very nice and pleasant!!

Problem: STD check **Gender:** Male
Received questionnaire? Yes **Satisfaction rating:** 7
Comment: Excellent patient concern from [Provider 2] – very thorough and helpful

Problem: Sick **Gender:** Male
Received questionnaire? No **Satisfaction rating:** 6
Comment: Thank you for helping me feel better.

Problem: Women's annual **Gender:** Female
Received questionnaire? No **Satisfaction rating:** 7
Comment: Thank you. Good service.

Problem: Physical **Gender:** Female
Received questionnaire? No **Satisfaction rating:** 7
Comment: Came to get a physical and was very satisfied.

Problem: Cold **Gender:** Female
Received questionnaire? No **Satisfaction rating:** 7
Comment: Always prompt thorough service.

Problem: Flu **Gender:** Female
Received questionnaire? No **Satisfaction rating:** 7
Comment: [Provider 1] was wonderful. She has a calming manner and thorough methods.

Problem: STD check **Gender:** Female
Received questionnaire? Yes **Satisfaction rating:** 7
Comment: The clinicians are very easy to talk to in my opinion. I feel comfortable and satisfied with the services provided.

Problem: Flu **Gender:** Female
Received questionnaire? Yes **Satisfaction rating:** 3
Comment: Keeping the visit under 1 hour would be helpful.

Problem: Hurt/injured **Gender:** Female
Received questionnaire? No **Satisfaction rating:** 7
Comment: Thanks, everything was great!!

Problem: Women's annual **Gender:** Female

Received questionnaire? Yes **Satisfaction rating:** 7
Comment: This was the most comfortable exam I've had, very nice atmosphere.

Problem: Physical **Gender:** Male
Received questionnaire? Yes **Satisfaction rating:** 6
Comment: Always feel good after seeing [Provider 3].

Problem: Stomach ache **Gender:** Female
Received questionnaire? No **Satisfaction rating:** 7
Comment: The doctors and nurses were very helpful and had good bedside manner.

Problem: Sore throat **Gender:** Female
Received questionnaire? Yes **Satisfaction rating:** 7
Comment: I like/prefer coming to this clinic. The staff is nice and understanding. Willing to always answer questions. The staff is very professional.

Problem: Sore throat **Gender:** Female
Received questionnaire? No **Satisfaction rating:** 7
Comment: The speed to with which I was seen to was excellent.