An Exploratory Study of Pharmacist Self-Reported Antidepressant Medication Counseling Behaviors

by

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Abstract

Depression is a relatively common and serious mental health disorder, which is expected to become the second leading disease burden worldwide in the next decade. Despite the already high and increasing prevalence of depression, not all individuals who suffer with depression receive proper treatment in the primary care setting. Because problems exist when treating depression solely in primary care and these problems can be exacerbated by patient factors, pharmacists are in an excellent position to help address these problems through the provision of antidepressant counseling. The primary purpose of this study was to identify and examine factors that are important to pharmacists' engagement in antidepressant counseling.

This study was the first known study to examine the applicability of aspects of the Theory of Planned Behavior and the Common Sense Model of Illness Representations together in an integrated model to identify and explain factors that affect pharmacists' engagement in antidepressant counseling. Two types of antidepressant counseling behaviors were examined, reassurance and monitoring. Reassurance counseling behaviors included the provision of pharmacist evaluation of patient illness and medication knowledge, and ensuring adherence. Antidepressant monitoring behaviors included the monitoring of drug efficacy and side effects.

A mixed methods approach was used to collect data from respondents. A questionnaire was mailed to 600 randomly selected Alabama community pharmacies. Responding community pharmacists completed a questionnaire in either paper or electronic format. Of the 600

questionnaires sent, a total of 119 responses were received; yielding an overall response rate of 20.6%.

Four of the independent variables, consequences, control/cure of illness, episodic timeline, and self-efficacy, were found to be important predictors of pharmacists' engagement in antidepressant reassurance counseling. No independent variables were found to be important predictors of pharmacists' engagement in antidepressant monitoring. Study results show that personal factors are important predictors of pharmacists' engagement in antidepressant counseling. This study suggests potential strategies for facilitating pharmacists' engagement in antidepressant counseling. Further research is needed to identify other factors that are important to pharmacists' engagement in antidepressant counseling.

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Chapter 1. Introduction

Overview of the Study

Using components of the Common Sense Model (CSM) of Illness Representations and aspects of the Theory of Planned Behavior (TPB) as the theoretical framework, the primary objective of this study was to identify and examine factors that are important to pharmacists' provision of antidepressant counseling. More specifically, according to the CSM, this study posits that pharmacists' perceptions of patient depression will influence pharmacist's engagement in antidepressant counseling behaviors; hence, the relationship between pharmacists' illness perceptions and pharmacist antidepressant counseling behaviors was examined. Based on aspects of the TPB, this study assessed the impact of pharmacist self-efficacy (as indicator of perceived control) and organizational and environmental influences (subjective norm) on pharmacist's provision of antidepressant counseling.

History and Significance of Depression

Depression is a relatively common and serious mental health disorder (Bleakley, 2009). There are three types of depressive disorders, Major Depressive Disorder, Dysthymic Disorder, and Depression (NOS) Not Otherwise Specified, of which the most commonly diagnosed are Major Depressive Disorder and Dysthymic Disorder (National Institute of Health [NIH], 2008). Depression has a lifetime prevalence of 17% across all age groups and is expected to become the second leading disease burden worldwide in the next decade (Murray & Lopez, 1997). An essential feature common to depressive disorders, which is required for a clinical diagnosis of

depression, is significant distress or impairment in an individual's personal, social, and/or economic functioning (American Psychiatric Association [APA], 2000). Depression-related employee absenteeism costs employees and employers approximately $17 billion each year (Agency for Healthcare Research and Quality [AHRQ], 2002). In addition, patients with depression more heavily utilize heath care services, and due to its comorbidity with other chronic conditions, untreated depression can potentially lead to serious medical complications for conditions such as heart disease, stroke, cancer, HIV/AIDS, diabetes and Parkinson's disease (NIH, 2008).

Antidepressant Medication Therapy

Antidepressant medications are an effective and accessible treatment mechanism for alleviating depressive symptoms (Bleakley, 2009). Antidepressants are recommended as a first-line treatment mechanism for most adult patients who are experiencing moderate to severe depressive symptoms (Bleakley, 2009), and antidepressants are among the top most prevalently prescribed medications in the U.S. (Parks, 2009). Despite the availability of effective antidepressant medications, there is a high rate of antidepressant nonadherence. Estimates of antidepressant medication nonadherence range from 21% (Bosmans et al., 2007) to 33% (Stimmel, 2001) of patients discontinuing treatment within the first 30 days and up to 44% discontinuing treatment within 90 days of treatment commencement (Masand, 2003). Treating depression is very costly; in the U.S. alone it is estimated to cost $43.7 billion annually in absenteeism from work, lost worker productivity, and direct treatment costs (Masand, 2003; Greenberg, Stiglin, Finkelstein & Berndt, 1993). Antidepressant medication nonadherence exacerbates this already enormous cost burden on the U. S. health care system (Masand, 2003).

To begin to receive the full therapeutic effect from antidepressants, clinical guidelines

recommend that antidepressants be taken as prescribed for at least three to four weeks (NIH, 2008) with additional recommendations that include the continuation of antidepressants for at least eight months after symptom remission to prevent the potential for relapse (Aikens, Nease, & Klinkman, 2008). Premature discontinuation of antidepressant medication contributes to a high relapse rate and poor treatment outcomes (Rickles, Svarstad, Statz-Paynter, Taylor, & Kobak, 2005).

Patients prematurely discontinue antidepressants for a variety of reasons including costly prescriptions, adverse side effects, and lack of positive effect, among others (Capoccia et al., 2004). Adverse effects are the most frequent reason given by physicians and patients for premature treatment discontinuation (Masand, 2003). Adverse effects include expected and unexpected effects of taking antidepressant medication, which commonly includes headache, nausea, insomnia and/or nervousness, constipation and agitation (NIH, 2008). More severe adverse effects patients may potentially experience include bladder problems, blurred vision and sexual dysfunction (NIH, 2008).

It is also important to recognize that depression is comorbid with many chronic medical conditions such as diabetes, HIV, and others, and that patients are often nonadherent with self-care behaviors for these chronic conditions as well; this nonadherence may result from the symptoms of their depression acting as a barrier to patients taking proper care of themselves (Collins, Westra, Dozois, and Burns, 2004). For some of these patients with comorbid chronic conditions this poses a serious adherence problem because they have been prescribed medications for the treatment of these chronic conditions in addition to receiving medication(s) for the treatment of depression.

Problems of Treating Depression in Primary Care

Despite the already high and increasing prevalence of depression, not all individuals who suffer with depression receive proper treatment in the primary care setting (Kates & Mach, 2007; Young, Klap, Sherbourne, & Wells, 2001). This is because the diagnosis and treatment of depression in primary care has significant limitations (Eisenberg, 1992). One major limitation is that as many as half of patients who present with symptoms of depression in the primary care setting remain undiagnosed and untreated (Depression Guideline Panel, 1993; Simon & VonKorff, 1995). Even if a patient receives a diagnosis of depression and is prescribed an antidepressant medication for treatment, the dosage of antidepressant medication prescribed to patients in primary care is often at suboptimal levels (Simon & VonKorff, 1995). Moreover, among patients who are prescribed an antidepressant for the treatment of depression, less than 20% will receive proper follow-up and monitoring of treatment efficacy by their primacy care physicians (Kates & Mach, 2007).

Hence, the main limitations of treating depression in primary care include a lack of diagnosis and treatment of depression, lack of continuity of care, and/or inadequate treatment plans, treatment monitoring, and treatment follow-up, which can result in higher rates of antidepressant nonadherence and poor patient outcomes among patients with depression (Kates & Mach, 2007; Young et al., 2001; Eisenberg, 1992). These limitations warrant immediate attention from healthcare providers to ensure appropriate treatment and counseling.

Patient-Related Factors Contributing to Nonadherence

The manner in which patients manage their health issues and associated daily symptoms impacts their health and overall quality of life (Burman, 1995). Patients may not be cognizant of the importance of daily adherence to their antidepressant regimens and its impact on depression and may therefore be inconsistent with their adherence to antidepressants. In addition, patients

may be unaware of the extent to which antidepressant medication adverse effects may occur (Hermansen-Kobulnicky, Wiederholt, & Chewning, 2004). The lack of recognition and/or reporting of adverse effects by patients to their health care providers may be due to insufficient knowledge regarding if the symptom experienced is a symptom of depression, a different illness or an adverse effect of the antidepressant medication (Hermansen-Kobulnicky et al., 2004). Without any type of consultation with a health care provider for patients with newly prescribed antidepressants (during the first 90 days of antidepressant medication therapy) regarding patients' knowledge and understanding of depression and patients' understanding of the drug regimen and its purpose, inconsistencies in adherence to the prescribed antidepressant medication(s) as well as adverse effects experienced by patients may go unreported and therefore remain unaddressed by the patient's health care providers.

Other common reasons self-reported by patients for discontinuing antidepressants include the perception of successful treatment of their depression symptoms, the experience of adverse effects, disbelief in the efficacy of the antidepressants, and the belief that additional antidepressant treatment is unnecessary (Stimmel, 1995). Patients have also reported costly prescriptions and lack of positive effect as reasons for their nonadherence to antidepressants (Capoccia et al., 2004). Furthermore, patients' beliefs about their depression and the treatment can have an impact on antidepressant adherence (Horne, 2003; Leventhal, Diefenbach, & Leventhal, 1992) as well as factors related to their environment such as the lack of a social network (Krueger, Berger, & Felkey, 2005). Hence, research findings suggest that in order for patients to be adherent to their antidepressant regimens, they must have an understanding of their depression and the purpose of taking their antidepressants as prescribed (Krueger et al., 2005).

Pharmacist's Role in Patient Depression Care

The pharmacist's role has shifted from the traditional dispensing of medications to include the provision of pharmacy-based patient care services. Pharmacists provide health screenings for conditions such as cholesterol and diabetes as well as medication therapy management (MTM) services and disease management services (DM) for chronic illnesses including asthma, diabetes, cholesterol, hyperlipidemia, and GERD (American Pharmacists Association, 2010). Overall, pharmacists have been successful in expanding their roles to include these patient care services, which suggests that pharmacists may have a successful role in depression care as well (Boudreau et al., 2002).

Pharmacists typically have more contact with patients and are more easily accessible than other health care providers (Madhavan, Rosenbluth, Amonkar, Borker, & Richards, 2001), which place pharmacists in an excellent position to play an important role in depression care. Pharmacists often develop and maintain long-term therapeutic relationships with a patient, which often results in the patient only visiting that one pharmacy for his/her medication needs (Brook, van Hout, Nieuwenhuyse, & Heerdink, 2003). Moreover, pharmacists have expertise in medication management and can therefore provide patients information pertaining to their antidepressant medication regimens (Badger, Kingscote-Davies, & Nolan, 2002).

In particular, pharmacists can assume a more active role in depression care through their participation in the following pharmacy-based patient care activities. First, pharmacists can provide patients with accurate information about their depression and antidepressant medications (Scheerder, De Coster, & Van Audenhove, 2008). Pharmacists can also monitor and encourage medication adherence (Brook et al., 2003; Bultman & Svarstad, 2002). Likewise, pharmacists can monitor antidepressant treatment effectiveness (Adler et al., 2004; Finley et al., 2002) and

assess the potential for adverse drug effects (Boudreau et al., 2002). Furthermore, pharmacists can facilitate continuity of care through collaboration and communication with patients' primary care providers (Badger et al., 2002), particularly when critical medication changes are indicated. The provision of pharmacist evaluation of patient illness and medication knowledge, monitoring of drug efficacy and side effects, ensuring adherence, and working with prescribers to modify drug therapy, when needed, is referred to as antidepressant counseling hereafter.

By assuming a more active role in depression care through the provision of antidepressant counseling, pharmacists can have a significant impact on antidepressant adherence and patient outcomes among patients with depression. Because problems exist when treating depression solely in primary care and these problems can be exacerbated by patient factors, pharmacists are in an excellent position to help address these problems through the provision of antidepressant counseling. However, many pharmacists do not engage in antidepressant counseling and very little has been done to investigate why this is so.

Common Sense Model of Illness Representations

This study is the first study to use aspects of the Common Sense Model to help explain why some pharmacists engage in antidepressant counseling. The Common Sense Model (CSM) of Illness Representations postulates that an individual is an active problem-solver who seeks information from his/her own subjective experiences to assist in the creation of illness representations (Hermansen-Kobulnicky et al., 2004).

The CSM has been widely used to examine the patient perspective of illnesses. For example, Brown and colleagues (2001) examined primary care patients' personal illness perceptions of depression to determine if these illness perceptions are associated with depression coping strategies and treatment-related behaviors. Their findings indicate that patients'

understanding of depression and its consequences are associated with how they choose to manage their depression. Hence, their findings suggest that patients' perspectives about their depression may play a key role in their use of self-management strategies. Most recently, Brown and colleagues (2007) evaluated the applicability and clinical utility of the CSM in depressed primary care patients and their findings suggest that specific coping strategies can have different impacts on functioning, depending on the perceived cause of depression. In addition, their findings indicate that the CSM provides evidence for the identification of potentially modifiable beliefs and coping behaviors, which can be targeted for intervention to improve patients' depressive symptoms and outcomes.

There have been very few attempts to use the CSM to examine the provider perspective of illnesses. For example, Barrowclough, Lobban, Hatton, and Quinn (2001) examined the illness perceptions of caregivers for relatives who had been diagnosed with schizophrenia. Specifically, their study investigated factors that influence caregivers' responses to family members with schizophrenia. Their findings suggest that caregivers' illness perceptions of schizophrenia may have important implications for patients, since caregivers' responses can be an important mediator of the outcome of schizophrenia.

In addition, Heijmans and colleagues (2001) examined differences in illness perceptions of two chronic illnesses (diabetes and osteoarthritis) among patients and their primary care providers (PCPs) to determine the influence of these differences on patient health status and health care usage. Patients and their PCPs were asked questions such as the extent they felt the illness was progressive, life threatening, painful, and controllable. The results of their study revealed that patients and their PCPs differ in regard to illness perceptions of these chronic illnesses; greater disparity was observed among patients and their PCPs for osteoarthritis.

Observed differences in illness perceptions for each chronic illness (diabetes and osteoarthritis) among patients and their PCPs were associated with a worse health status of patients and increased health care usage. There have been no identifiable studies that have examined the applicability of the CSM for health care providers' illness perceptions of depression.

Theory of Planned Behavior

The Theory of Planned Behavior (TPB) is an extension of the Theory of Reasoned Action (TRA). Fishbein originally developed the TRA in 1967, and Ajzen and colleagues proposed adding perceived behavioral control to the TRA theoretical model, which is now known as the TPB; the TPB focuses on theoretical constructs of individual motivational factors as determinants of the likelihood of engaging in a particular behavior (Montano & Kasprzyk, 2002). To determine the likelihood of the occurrence of a particular behavior, the TPB includes the constructs of attitude (an individual's positive or negative feelings about engaging in a behavior), subjective norm (an individual's perception of whether people important to him/her think the behavior should be engaged in), and perceived behavioral control (an individual's perception of the difficulty of engaging in a behavior), which all lead to an individual's behavioral intention (an individual's actual plan to engage in a behavior) (Furneau, 2005; Montano & Kasprzyk, 2002).

The Theory of Planned Behavior (TPB) postulates that an individual's behavior is driven by his/her behavioral intentions; hence, according to the TPB, the most important and direct determinant of an individual's behavior is the person's behavioral intention (Montano & Kasprzyk, 2002). This assumption is dependent upon the degree to which the behavior is under the person's control, referred to as volutional control (Montano & Kasprzyk, 2002). An individual's perception of control over his/her behavioral activity combined with his/her

intention to engage in the particular behavior is expected to have a direct impact on his/her engagement in the behavior (Montano & Kasprzyk, 2002).

The Theory of Planned Behavior (TPB) has been widely used to explore factors that impact health care professionals' beliefs and attitudes about engaging in healthcare-related behaviors (Walker, Watson, Grimshaw, & Bond, 2004). It has also seen limited use in pharmacy research of pharmacists' beliefs and attitudes about and intentions to provide various health care services. For example, Herbert, Urmie, Newland, and Farris (2006) examined the applicability of the TPB to predict the behavioral intention of pharmacists to provide Medicare medication therapy management services (MTM). The results of their study revealed that pharmacists showed generally positive intentions to provide MTM. Their results further showed that perceived behavioral control, subjective norm, and attitude were significant predictors of intentions ($P < .05$) to provide Medicare MTM.

In a recent systematic review of TPB studies, Perkins and colleagues (2007) examined the usefulness of the TPB in predicting various types of health care providers' behaviors. Among the studies they reviewed, which included studies that used the TPB to predict pharmacists' behaviors, their findings suggest that the constructs of the TPB model and the constructs' correlations to intentions and behavior vary based on the specific health-related behavior and the group of healthcare providers being studied. Hence, their findings suggest that the different constructs of the TPB can be used to predict intentions and behaviors among pharmacists.

Previous research has described the TPB construct perceived behavioral control as a single latent variable comprised of two separable belief dimensions, beliefs about self-efficacy and beliefs about controllability (Ajzen, 2002). Self-efficacy beliefs are an individual's perception of his/her ability to engage in or carry out a specific behavior or activity (Planas,

2010). Beliefs about self-efficacy have been shown to directly predict pharmacist's engagement in and provision of counseling to patients (Mason, 1983; Planas, 2010; Lin, 2008). Hence, research results have suggested that the confidence pharmacists' perceive they have in their knowledge and ability to engage in patient care activities at their practice sites may be a critical factor to their provision of medication counseling and other patient care services.

Each of these theories (CSM and TPB) makes unique contributions toward predicting individuals' behavioral decisions. The CSM components were selected for the proposed model to examine pharmacists' illness perceptions of depression because the CSM captures both cognitive and emotional processes and it views behavioral decisions not as static events but rather as dynamic processes that may change over time (Cameron & Leventhal, 2003). For example, unless pharmacists have had personal experiences with a particular illness, their primary source for information on which their illness perceptions about the specific illness are initially based is their medical knowledge and medication expertise (Weinman, Heijmans, & Figueiras, 2003). However, as pharmacists interact and communicate with patients diagnosed with and receiving treatment for the illness, their illness perceptions may change to reflect a greater (cognitive and emotional) understanding of the illness (Weinman et al., 2003).

Depression is a unique mental health illness, which makes it an interesting and sometimes difficult illness to study; accordingly, asking specific questions to capture various aspects of illness perceptions of depression will help to obtain a better understanding of pharmacists' perceptions (attitudes) of the illness. Hence, by combining aspects of each theory into a new, integrated theoretical model, these theoretical components together may provide a more comprehensive theoretically-based explanation for pharmacists' provision and adoption of pharmacy-based antidepressant counseling.

Purpose of the Study

The purpose of this study was to identify and examine factors that are important to pharmacists' provision of antidepressant counseling. According to the CSM, this study posits that pharmacists' perceptions of patient depression will influence pharmacist's engagement in antidepressant counseling behaviors. Therefore, the relationship between pharmacists' illness perceptions and pharmacist antidepressant counseling behaviors was examined. Based on aspects of the TPB, this study assessed the impact of pharmacist self-efficacy and organizational and environmental influences (subjective norm) on pharmacist's antidepressant counseling behaviors.

At this time, little is known regarding which factors impact pharmacist's provision of antidepressant counseling. Pharmacy-based antidepressant counseling is not a widely adopted practice; therefore, better understanding of the influence of pharmacists' perceptions of depression, pharmacists' self efficacy, and practice barriers/facilitators on pharmacist's engagement in antidepressant counseling may help facilitate the adoption of this important practice.

Expected Contributions

This study was the first known study to examine the applicability of aspects of the Common Sense Model (CSM) of Illness Representations and the Theory of Planned Behavior (TPB) together in an integrated model to identify and explain factors that affect pharmacist's provision of antidepressant counseling to patients prescribed antidepressants. This study examined factors that impact pharmacists' current roles in pharmacy-based patient care services.

This dissertation makes significant contributions to two main areas: (1) public health and pharmacy practice and (2) pharmacy-based research. First, this study will contribute to public

health and pharmacy practice through the identification and evaluation of pharmacists' perceptions of depression, current practices, and barriers/facilitators to the provision of antidepressant counseling. Pharmacy managers and practitioners may use the information provided by the results of this study to assist in the development of action plans that will expand pharmacists' current roles in pharmacy-based mental health care initiatives, especially for depression, and effectively engage pharmacists in antidepressant counseling behaviors.

Furthermore, the results of this study may assist pharmacy managers and practitioners in the identification of barriers/facilitators (self-efficacy, organizational and/or environmental influences) to pharmacists' provision of antidepressant counseling at their pharmacies. Once barriers that are specific to their pharmacists and/or pharmacies have been identified, effective strategies can be developed to minimize and/or eliminate the impact of these barriers on pharmacists' engagement in antidepressant counseling. Additionally, schools and colleges of pharmacy may use the results of this study to develop effective strategies and/or make modifications to curriculum that might effectively address issues such as perceptions of depression, self-efficacy, and organizational and environmental influences on pharmacist engagement in antidepressant counseling.

The second contribution is to pharmacy-based research, particularly regarding the adoption of innovative patient care services in pharmacy. This study offers a unique perspective to pharmacy-based research by investigating the impact of organizational and personal factors on pharmacist engagement in antidepressant counseling. Since, perceptions shape individuals' attitudes and behaviors and can be influenced by external factors such as organizations and the environment, it is of the utmost importance to investigate all of these factors to gain a better and more thorough understanding of the adoption decisions of pharmacists. Gaining a better

understanding of the influence that organizational and personal factors have on pharmacists' adoption decisions regarding antidepressant counseling may help researchers develop a more complete and effective framework from which to understand the adoption of this and other innovative patient care services in pharmacy. In this way, researchers can then help facilitate the adoption of antidepressant counseling.

Organization of Dissertation

This dissertation is presented in five chapters. Chapter one provides a description of the problem and discusses the significance of conducting this study and the expected contributions it may make to the literature. Chapter two presents the literature review, which provides an in-depth background for this study and the theoretical framework from which the problem was addressed. Chapter three presents the research questions and the formal research hypotheses as well as the research methods including the study design, setting selection, data collection methods, measures, and data analysis plan. Chapter four describes the empirical results that were obtained from analyzing the data and testing the study hypotheses. A summary of the descriptive statistics and statistical test results are provided. Chapter five concludes this dissertation with a summary of the findings, discussion of the results and implications for future study. Major contributions to the existing body of knowledge and limitations of the study are also presented.

Chapter 2. Literature Review

Impact and Significance of Depression

Depression is a serious and relatively common mental health disorder. It is considered one of the most prevalent disorders of our time (Arkowitz & Burke, 2008), and is one of the top three most common reasons for visits to primary care physicians (Shah, 1992; Gilbody, Whitty, Grimshaw, & Thomas, 2009). Depression is predicted to become the second greatest health-related illness worldwide by 2020 (Murray & Lopez, 1996). Research has shown that an estimated 35 million adults in the U.S. will suffer from depression at some point in their lifetime (Kessler et al., 2003). The lifetime prevalence of depression is estimated to be 17 percent with 5 to 9 percent occurrence in adult patients and up to 2 percent in children and 4 percent in adolescents (Carnahan, Lund, Chrischilles, & Perry, 2008).

According to the Diagnostic and Statistical Manual for Mental Disorders (DSM IV-TR), an essential and common feature must be present for most mental health diagnoses, which is therefore required for a clinical diagnosis of a depressive disorder; this feature is that the symptoms experienced by the patient are causing significant distress or impairment in his/her personal, social, and/or economic functioning (APA, 2000). Of the three types of depressive disorders, the most commonly diagnosed are Major Depressive Disorder and Dysthymic Disorder (NIH, 2008). Symptoms of major depressive disorder (MDD) can begin at any age; however, the average age for the onset of depressive symptoms is the mid-20's (APA, 2000). The presence of five out of nine potential symptoms for a minimum of two weeks is required for a diagnosis of Major Depressive Disorder; these symptoms include: depressed mood for most of

the day, nearly everyday; reduced or complete loss of interest in usual activities; significant weight loss or weight gain (a change of 5% or more in body weight in one month); insomnia or hypersomnia; psychomotor agitation or retardation nearly everyday that is observable by others; fatigue or loss of energy; feelings of worthlessness or excessive guilt; diminished ability to think, concentrate or make decisions; and recurrent thoughts of death and/or suicidal ideation (APA, 2000). If a patient presents with less intense depressive symptoms and has experienced these symptoms for a period of at least two years, he/she may meet the criteria for a diagnosis of Dysthymic Disorder, which is a chronic but less severe type of depression (APA, 2000).

There are many factors that may contribute to depression. The exact cause of depression is unknown; it has been suggested that the cause of depression is a combination of genetic, biochemical, environmental, and psychological factors (NIH, 2008). However, for some individuals, a single factor can contribute to the onset of depressive symptoms while for others, there is no recognizable contributing factor to their depression and depressive symptoms (Mental Health America, 2010).

Depression is a risk factor for chronic medical conditions including heart disease, hyperlipidemia, high blood pressure, diabetes, and stress, among others (Millonig, 2009). Likewise, the presence of chronic medical conditions such as heart disease, stroke, cancer, HIV/AIDS, diabetes, and asthma is a major risk factor for depression in adult patients (Milonig, 2009). In fact, the risk of developing Major Depressive Disorder is increased in patients who have one or more chronic medical conditions (Katon, 2003). Depression also has a higher rate of comorbidity with other serious medical conditions such as heart disease, stroke, cancer, HIV/AIDS, diabetes, and Parkinson's disease (NIH, 2008). For example, among patients with

diabetes, depression is twice as common a comorbid condition in comparison to patients without diabetes (Carney, 1998; Anderson, Freedland, Clouse, & Lustman, 2001).

Patients who suffer with depression and comorbid mental and/or medical conditions experience greater morbidity, mortality, and financial costs (Collins & Escobar, 2006). The presence of depression in patients with comorbid medical conditions significantly increases the costs associated with the treatment of the medical condition. For instance, the annual treatment costs for managing diabetes, hypertension, and ischemic heart disease approximately doubles among patients who suffer with comorbid depression; costs for other medical conditions such as heart failure, allergic rhinitis, migraine, and back pain can nearly triple with comorbid depression (Collins & Escobar, 2006; Stewart, Ricci, Chee, Hahn, & Morganstein, 2003; Simon, Ormel, VonKorff, & Barlow, 1995; Unutzer et al., 1997).

A study conducted by Moussavi and colleagues (2007) explored the overall health status of patients who were diagnosed with depression or comorbid depression; the study revealed that depression results in a significantly greater decline in health when compared to angina, asthma, arthritis, or diabetes. In addition, when comparing patients with a chronic medical condition alone, patients with depression comorbid with a chronic medical condition reported significantly more medical symptoms when controlling for disease severity (Katon, Lin, & Kroenke, 2007). Likewise, the burden of physical symptoms associated with complications that arise from a medical condition may be likely to initiate or exacerbate the occurrence of depression (Katon, 2003).

Furthermore, depression is often comorbid with other mental health conditions. For example, depression is often comorbid with anxiety disorders such as post-traumatic stress disorder (PTSD), obsessive-compulsive disorder, panic disorder, social phobia, and generalized

anxiety disorder (GAD) (NIH, 2008). Individuals who abuse or are dependent on alcohol and/or other substances are also more likely to have comorbid depression in comparison to individuals who do not abuse or are not dependent on alcohol or other substances (NIH, 2008).

Depression increases health care utilization because patients who suffer with depression more heavily utilize heath care services, which costs $17 billion in lost workdays each year (AHRQ, 2002). At present, more than two-thirds (70%) of patients diagnosed with depression are employed; employees who suffer with depression or depressive symptoms are twice as likely as their non-depressed colleagues to miss work for health related reasons (Sipkoff, 2006; Druss, Rosenheck, & Sledge, 2000). Depression results in more employees missed days at work (709 per 1,000 employees) than arthritis (504), hypertension (484), asthma (438), or substance abuse (166) (Kessler, 2001). Hence, if left untreated, depression is as costly as diabetes or heart disease to the U.S. economy, costing more than $43.7 billion annually in absenteeism from work, lost worker productivity, and direct treatment costs (Masand, 2003; Greenberg et al., 1993; Bodenheimer, Lorig, Holman, & Grumbach, 2002).

Recognition of Depression and Depressive Symptoms

There are a number of measures currently used in primary care and research settings to screen for depression and depressive symptoms. The measures represent a patient-reported outcome and range from a 2-item screening measure for the presence of depression ("Over the past 2 weeks, have you felt down, depressed, or hopeless?" and "Over the past 2 weeks, have you felt little interest or pleasure in doing things?") to a full 30-item measure that assesses the severity of depression symptoms (Pinto-Meza, Serrano-Blanco, Peñarrubia, Blanco, & Haro, 2005). These depression measures do not diagnose depression, and they are not intended to diagnose depression; their purpose is to provide a patient-reported indication of the severity of

depression symptoms within a given time period (e.g., the past week), which are beneficial to health care practitioners as well as researchers (Sharp & Lipsky, 2002). While each depression screening measure has a unique scoring system that is based on the number of items that comprise the measure, they are usually scored as a continuous measure of severity of depression symptoms with higher scores indicative of more severe symptoms (Sharp & Lipsky, 2002). All depression measures have a predetermined cutoff score above which depression symptoms are considered significant and the likelihood of Major Depressive Disorder is substantially increased (Pinto-Meza et al., 2005; Sharp & Lipsky, 2002). Moreover, some depression measures provide a range of potential scores that are used to categorize different levels of symptom severity (Sharp & Lipsky, 2002). Despite the availability of these various screening measures for depression, depression is under-diagnosed in primary care. Needless to say this presents a major problem and is due to the underutilization of proper measures for recognizing depression in primary care settings.

According to a recent systematic review published in the Journal of Clinical Oncology, four of the most common self-report depression screening measures currently used in general depression research are the Beck Depression Inventory-II, Center for Epidemiologic Studies–Depression Scale, Patient Health Questionnaire-9, and Zung Self-Rating Depression Scale (Nelson, Cho, Berk, Holland, & Roth, 2010). The Beck Depression Inventory II (BDI-II) is a 21-question multiple-choice self-report inventory; it is used for measuring the self-reported severity of depression and/or depressive symptoms (Pasacreta, 1997). It was originally created by Beck in 1996 (Nelson et al., 2010). The Center for Epidemiologic Studies Depression Scale, created by Radloff in 1977, is the 20-item measure used to assess the presence of depression (Andersen, Marmgren, Carter, & Patrick, 1994; Nelson et al., 2010). The PHQ-9 is the nine-item depression

scale of the Patient Health Questionnaire created by Kroenke and colleagues (2001); it is the newest depression screening measure included in the article published in the Journal of Clinical Oncology (Nelson et al., 2010). There are two components of the PHQ-9: (1) 2-item screen for presence of depression - assessing symptoms and functional impairment to provide support for the presence of depression or depressive symptoms, and (2) 7-item screen for severity of depression - assigning a severity score to the presence of depression or depressive symptoms; the nine item scale provides a total score indicating symptom severity (Kroenke & Spitzer, 2002). The PHQ-9 is based directly on the diagnostic criteria for major depressive disorder in the Diagnostic and Statistical Manual Fourth Edition (DSM-IV) (Kroenke & Spitzer, 2002). Lastly, the Zung Self-Rating Depression Scale (SDS) has 20-items that assess affective, psychological, and somatic symptoms; 10 items are positively worded and 10 items are negatively worded (Nelson et al., 2010). The overall score on the Zung Scale is used to represent the severity of the depressive symptoms.

It is important to recognize that individuals who score above the established cutoff level of the depression screening measure should be interviewed by a mental health professional to appropriately assess for depressive disorder criteria and to receive a diagnosis, if applicable (Sharp & Lipsky, 2002). A formal assessment conducted by a mental health professional is deemed necessary to properly diagnose depression since many medical and mental health conditions have symptoms that are commonly associated with depression and because screening measures do not fully address important diagnostic features such as duration of symptoms, degree of impairment, and presence of comorbid psychiatric disorders (Sharp & Lipsky, 2002). Hence, the correct and ethical decision to be made is to refer an individual who scores above the cutoff level of the depression screening measure utilized to an appropriate mental health

professional for assessment, diagnosis, and proper treatment.

Barriers to the Diagnosis and Treatment of Depression

Barriers to the diagnosis and treatment of depression can be categorized into: patient-level, provider-level and systemic-level barriers. A study conducted by Collins, Westra, Dozois, and Burns (2004) identified certain patient-level barriers to seeking and utilizing effective mental health services; these barriers consisted of the individual's level of willingness to disclose the mental health problem, a fear of stigma and/or embarrassment, lack of time for treatment, a desire to handle problems on one's own, lack of awareness of available treatment options, the degree of distress/disruption in daily life due to symptoms, and demographic factors. The authors also identified certain provider-level barriers such as a lack of knowledge of mental health conditions, lack of willingness to diagnose and treat mental health conditions, and lack of sufficient monitoring of the effectiveness of mental health services. It has been further asserted in the literature that health care providers in all medical specialites have difficulties recognizing and diagnosing mental health conditions (Mitchell, Vaze, & Rao, 2009; Cepoiu et al., 2008). Other barriers to the recognition and treatment of depression are systemic-level or environmental barriers; these include lack of integration of mental health services into primary care, lack of provider awareness of the range of effective treatment options, and limited availability of specialty mental health providers (Collins et al., 2004).

Depression Diagnosis and Treatment in Primary Care

Most often, the diagnosis and treatment of depression is conducted in primary care settings (Mitchell et al., 2009). In fact, more than half of all depressed patients receive care exclusively from their primary care providers (Boudreau et al., 2002). Unfortunately, not all individuals who suffer with depression will receive proper treatment in the primary care setting

(Kates & Mach, 2007; Young et al., 2001); this is especially disconcerting when one considers the already high and increasing prevalence of depression.

The outcomes for patients with depression managed in primary care are suboptimal (Finley et al., 2002). Some of the reasons for the suboptimal outcomes include a high rate of inadequate recognition, diagnosis, and treatment of depression by health care providers; a stigma toward individuals who are diagnosed with mental health conditions including depression; and patients often lack necessary knowledge and information about their depression and medication and/or are unaware of the importance of treatment adherence (Goldman, Nielsen, & Champion, 1999; Millonig, 2009; Finley et al., 2002; Capoccia et al., 2004). Additionally, suboptimal treatment outcomes for depression in primary care have resulted from the health care provider having limited time to confer with patients (Williams, 1998; Katon, Von Korff, Lin, & Simon, 2001), inadequate intensity of the prescribed antidepressant medication(s) (Finley et al., 2002), insufficient monitoring (Kates & Mach, 2007), and/or prescribing the antidepressant medication(s) for an insufficient treatment duration (Capoccia et al., 2004).

Hence, the diagnosis and treatment of depression in primary care has significant limitations (Eisenberg, 1992). One major limitation is that as many as half of patients who present with symptoms of depression in the primary care setting remain undiagnosed and untreated (Depression Guideline Panel, 1993; Simon & VonKorff, 1995). Even if a patient receives a diagnosis of depression and is prescribed an antidepressant medication for treatment, the dosage of antidepressant medication prescribed to patients in primary care is often at suboptimal levels (Simon & VonKorff, 1995). Moreover, among patients who are prescribed an antidepressant for the treatment of depression, less than 20% will receive proper follow-up and monitoring of treatment efficacy by their primacy care providers (Kates & Mach, 2007). Hence,

in summary, the key limitations of treating depression in primary care include a lack of diagnosis and treatment of depression, lack of continuity of care, and/or inadequate treatment plans, treatment monitoring, and treatment follow-up, which can result in higher rates of antidepressant nonadherence and poor patient outcomes among patients with depression (Kates & Mach, 2007; Young et al., 2001; Eisenberg, 1992).

Treatment of Depression

Initial health care decisions for the treatment of depression may include the use of psychotherapy and/or antidepressant medications (Rickles, 2003). Even though a treatment approach that utilizes both medication and psychotherapy has been proven to be very efficacious in the treatment of depression, financial limitations may constrain some patients from seeking psychotherapy (Rickles, 2003). Antidepressant medications are recommended as a first-line treatment mechanism for most adult patients who are experiencing moderate to severe depressive symptoms since they are an effective, accessible, and economical treatment mechanism for depression (Bleakley, 2009). Hence, the preferred treatment mechanism for the management of depression in primary care is antidepressant medication (Finley et al., 2003).

Antidepressant Nonadherence

Despite the availability of effective antidepressant medications, there is a high rate of antidepressant nonadherence. Estimates of antidepressant nonadherence range from 21% (Bosmans et al., 2007) to 33% (Stimmel, 2001; Rickles et al., 2005) of patients discontinuing treatment within the first 30 days and up to 44% of patients discontinuing treatment within 90 days of treatment commencement (Masand, 2003). In order to begin to achieve the optimal therapeutic effect from antidepressants, clinical guidelines recommend that antidepressants be taken as prescribed for at least three to four weeks (NIH, 2008), with additional

recommendations that include the continuation of antidepressants for a minimum of eight months after symptom remission to prevent the potential for relapse (Aikens et al., 2008). Although treatment recommendations suggest that patients receive at least eight months of continuous pharmacotherapy, research suggests that only 30-40% of patients will receive a full course of antidepressant medication treatment (Agency for Health Care Policy and Research [AHCPR], 1993; Venturini, Sung, Nichol, & Sellner, 1999; Kobak et al., 2002).

Adherence/Nonadherence Factors

Nonadherence to prescription medication therapy creates a major threat to the health and well-being of the U.S. population (Peterson, Takiya, & Finley, 2003). Nonadherence can be very costly; in a recent report by the New England Healthcare Institute (NEHI) it is estimated that prescription medication nonadherence costs the U.S. health care system as much as $290 billion annually (New England Healthcare Institute, 2009). Adherence can be affected by numerous factors such as patient characteristics, psychosocial and behavioral characteristics, side effects of the medication, and the patient-provider relationship, among others (Pampallona, Bollini, Tibaldi, Kupelnick, Munizza, 2002; Chakraborty, Avasthi, Kumar, & Grover, 2009; Krueger, Felkey, & Berger, 2003).

There have been several studies that have reported nonadherence to antidepressant medication regimens. Nonadherence to antidepressants have been reported for patients in a variety of medical and mental health contexts including those who are privately insured (Katzelnick, Kobak, Jefferson, & Griest, 1996), have Medicaid coverage (Melfi et al., 1998), receive managed pharmacy benefit plans (Lewis, Marcus, Olfson, Druss, & Pincus, 2004), specialty mental health (Katzelnick et al., 1996; Simon, Von Korff, Rutter, & Peterson, 2001; Fairman, Drevets, Kriesman, Teitelbaum, 1998; Olfson, Marcus, Tedeschi, & Wan, 2006) and

primary health services (Dunn, Donoghue, Ozminkowski, Stephenson, & Hylan, 1999; Simon, VonKorff, Wagner, & Barlow, 1993). Patient nonadherence to antidepressant medication regimens prescribed in primary care has been attributed to several factors including a failure of the health care provider to inform patients of (1) the potential for adverse effects, (2) the delay in onset of treatment effect, and (3) the need to continue antidepressant medication treatment beyond symptom remission (Lin et al., 1995).

Some of the most common reasons that patients self report for discontinuing antidepressants include the perception of successful treatment of their depression symptoms, the experience of adverse effects, disbelief in the efficacy of the antidepressants, and the belief that additional antidepressant treatment is unnecessary (Stimmel, 1995). Other reasons for antidepressant nonadherence that patients have reported include costly prescriptions and lack of positive effect (Capoccia et al., 2004). Among all the reasons that patients self-reported for antidepressant nonadherence, adverse effects are the most frequent reason reported by patients and their health care providers for nonadherence (Masand, 2003). Adverse effects include expected and unexpected effects of taking antidepressant medication, which commonly includes headache, nausea, insomnia and/or nervousness, constipation and agitation (NIH, 2008). More severe adverse effects patients may potentially experience include bladder problems, blurred vision and sexual dysfunction (NIH, 2008).

Many factors have the potential to contribute to patient's nonadherence to prescribed antidepressant medications. Patient nonadherence for newly prescribed antidepressants (during the first 90 days of antidepressant medication therapy) can be exacerbated if patients' knowledge and understanding of depression and understanding of the drug regimen and its purpose are not assessed by their health care providers. Furthermore, without any type of consultation with a

health care provider for patients with newly prescribed antidepressants, patient's questions and concerns including the likelihood of experiencing adverse effects and what these effects might entail may go addressed. Patient's questions which remain unanswered and/or their concerns that are unexplored by health care providers may further contribute to patient nonadherence.

Mechanisms to Improve Antidepressant Adherence

One mechanism that revealed positive effects for antidepressant adherence is the more active role that patients can assume (Frank, Kupfer, & Siegel, 1995). Patients who play a more active role in their depression care tend to be more adherent with their antidepressant medication regimens; this active role may have a positive impact on patient adherence due in part to more control patients feel they have over their health and corresponding health care. Furthermore, patients' beliefs about their depression and the treatment may have an impact on antidepressant adherence (Horne, 2003; Leventhal et al., 1992), with greater and sustained adherence more likely to be found among patients with favorable attitudes toward their antidepressant medications (Lin et al., 2003; Aikens, Nease, Nau, Klinkman, & Schwenk 2005).

A second and related mechanism used to improve antidepressant adherence reported in the literature is patient education. Antidepressant medication adherence can be positively impacted through health care providers educating patients about their depression diagnosis and treatment regimens (Frank et al., 1995). Research has shown that successful mechanisms for maximizing treatment outcomes for patients diagnosed with depression include patient education (e.g., providing the patient with specific information about the onset of the antidepressant medication and expected duration of treatment), identification and correction of patients' inaccurate perceptions of depression and/or antidepressants, and identification and rectification of the occurrence of antidepressant adverse effects (Stimmel, 2001).

Another mechanism reported in the literature that has positively impacted antidepressant adherence is proper communication between the patient and the health care provider. Patients who discuss their treatment regimens, including duration and types of treatment available, with their pharmacists and physicians have been shown to be more adherent with their antidepressant regimens compared to patients who do not have these discussions with their health care providers (Bull et al., 2002; Bultman & Svarstad, 2000).

A fourth and more advanced mechanism reported in the literature that has resulted in the successful treatment of depression is careful monitoring and, when needed, fine-tuning of the treatment regimen by health care providers (Stimmel, 2001). This mechanism is considered more advanced because it utilizes multiple health care providers who collaborate as a part of the patient's healthcare team. Pharmacists play a critical role in this mechanism to improve antidepressant adherence since they are medication experts. In addition, pharmacists are in an excellent position to monitor drug efficacy and adherence and to recommend fine-tuning of patients' treatment regimens to prescribers when needed because pharmacists are easily accessible, they provide extended hours of service for patient convenience (Rosenbluth, Madhavan, Borker, & Maine, 2001), and they can collaborate with prescribers to adjust antidepressant medication therapy for optimal benefits. Hence, pharmacists can help impact adherence outcomes by monitoring patient medication and treatment for efficacy and adherence.

Researchers have examined the effect of these four different mechanisms on antidepressant adherence; the results of these studies have been mixed, suggesting that a single mechanism for improving antidepressant adherence for all patients diagnosed with depression has not emerged due to the variety of factors that may combine and influence antidepressant nonadherence (Stimmel, 2001). Little research has examined the utilization of a combined

approach of two or more of the previously mentioned mechanisms for improving adherence to antidepressants; therefore, it is important to explore health care provider utilization of a combined approach to patient care that uses two or more of the aforementioned mechanisms to improve antidepressant adherence.

Pharmacist's Role in Patient Care Services

The pharmacist's role has been expanding from the traditional dispensing of medications to the provision of medication therapy management (MTM) and disease management (DM) services. Pharmacists provide health screenings for conditions such as cholesterol and diabetes as well as medication therapy management (MTM) services for chronic illnesses including asthma, diabetes, cholesterol, hyperlipidemia, and GERD (American Pharmacists Association, 2010). Previous research conducted on the pharmacist's role in the provision of MTM and DM services has reported positive impacts on the quality of patient care and patient outcomes for chronic illnesses such as diabetes, hyperlipidemia, hypertension, and asthma (Capoccia et al., 2004).

Effective communication between the patient and pharmacist is paramount to the success of pharmacy-based patient care services. An excellent example of the value of effective communication between the patient and pharmacist can be observed in the landmark study of the Asheville Project. In this project, patients who were employees of the City of Asheville and pharmacists work together to achieve better patient outcomes (Cranor & Christensen, 2003). The results of the Asheville Project showed that a care system led by community pharmacists resulted in lower total health care costs, fewer sick days missed at work, and increased patient satisfaction with services provided by pharmacists for program participants (Cranor, Bunting, & Christensen, 2003). Since this study was first published, there have been numerous studies reported that have replicated the success of the Asheville Project, which helped to recognize the importance of the

pharmacist in the provision of patient health care services as well as highlighted the importance of effective communication between the patient and the pharmacist (Cranor et al., 2003).

In addition to establishing and maintaining effective relationships and effective communication with patients, pharmacists have expertise in medications and medication management and can provide patients with expert information pertaining to their medication regimens (Badger et al., 2002). Armour and colleagues (2008) conducted a systematic review of studies of community pharmacy-based disease management programs and their results revealed that programs designed to target medication adherence for patients with chronic health conditions such as asthma, diabetes, and cardiovascular disease have demonstrated positive effects on clinical outcomes (Armour, Smith, & Krass, 2008). Hence, pharmacists are healthcare professionals who have the expertise and ability to implement and sustain comprehensive medication services (Armour et al., 2008).

Overall, pharmacists have been successful in expanding their roles to include various patient care services, which suggests that pharmacists might have a successful role in depression care as well (Boudreau et al., 2002). Pharmacists have the potential to improve outcomes for some mental health conditions such as depression by increasing adherence, making proper adjustments to medications, and monitoring and managing adverse side effects (Capoccia et al., 2004).

Pharmacist's Role in Depression Care

Pharmacists typically have more contact with patients and are more easily accessible than other health care providers (Madhavan et al., 2001), which place pharmacists in an excellent position to play an important role in depression care. Pharmacists often develop and maintain long-term therapeutic relationships with patients, which often result in the patient only visiting

one pharmacy for his/her needs (Brook et al., 2003). The ability of the pharmacist to develop and maintain the therapeutic relationship with patients is important because inadequate communication between the patient and his/her health care provider is suspected to play a major role in the development of poor treatment outcomes for depression (Rickles et al., 2005).

Pharmacists can assume a more active role in depression care through their participation in the following patient care activities. First, pharmacists can provide patients with accurate information about their depression and antidepressant medications (Scheerder et al., 2008), and pharmacists can monitor and support medication adherence (Brook et al., 2003; Bultman & Svarstad, 2002). Likewise, pharmacists can monitor antidepressant treatment effectiveness (Adler et al., 2004; Finley et al., 2002) and assess the potential for adverse drug effects (Boudreau et al., 2002). Furthermore, pharmacists can facilitate continuity of care through collaboration and communication with patients' primary care providers (Badger et al., 2002), particularly when critical medication changes are indicated. The provision of pharmacist evaluation of patient illness and medication knowledge, monitoring of drug efficacy and side effects, ensuring adherence, and working with prescribers to modify drug therapy, when needed, is referred to as antidepressant counseling hereafter. By assuming a more active role in depression care through the provision of antidepressant medication counseling, pharmacists can have a significant impact on antidepressant adherence and patient outcomes among patients with depression.

Pharmacists' Attitudes About Depression and Depression Care

In order to explore pharmacists' attitudes regarding depression and depression care, surveys have been used as a primary data collection method. According to the literature, pharmacists' attitudes toward depression and depression care have been generally positive. For

example, in 2008, Scheerder, De Coster, and Van Audenhove conducted a study about pharmacists' provision of care to patients with depression in comparison to patients with other, unspecified physical conditions. Of the 69 Belgian community pharmacists who completed the survey, most (85%) reported having a positive attitude toward nine potential roles for pharmacists in depression care; some of the nine roles described in the study were: maintaining a trusting relationship; knowing the patients medication history; providing information about the patients illness; following-up on side effects, symptoms reported, and medication adherence; providing support and listening to the patient and his/her concerns. Although most pharmacists reported having positive attitudes toward their potential roles in depression care, these positive attitudes were not reflected in their current practices.

The most predominant barrier reported by pharmacists was a lack of training in mental health issues, which may contribute to low self-efficacy for engaging in depression care activities. Other barriers pharmacists reported include a lack of collaboration with primary care providers, lack of sufficient time with individual patients, lack of information about patients and their treatment, and difficulty communicating with patients with depression. Therefore, their study findings suggest that although pharmacists may generally hold positive attitudes toward providing depression care, personal barriers such as low self-efficacy as well as organizational and environmental barriers can prevent them from engaging in this important practice.

In addition to the previous study, Scheerder, De Coster, and Van Audenhove (2009) explored community pharmacists' attitudes toward depression using a depression attitude questionnaire. They surveyed a random sample of 200 community pharmacists in Belgium and their findings once again showed that pharmacists' attitudes toward depression were generally positive. However, older pharmacists and pharmacists with a more pessimistic viewpoint toward

depression held more negative attitudes toward patients with depression.

Most recently, Rickles, Dube, McCarter, and Olshan (2010) examined the relationship between pharmacists' attitudes toward mental illnesses and the provision of pharmacy services to these patients. The researchers surveyed 750 randomly selected community pharmacies in the northeastern United States to assess perceptions of pharmacists pertaining to how the pharmacists and other healthcare professionals perceived individuals with depression and schizophrenia. They also assessed whether pharmacists' attitudes and/or other factors affected willingness to provide services to patients with mental illnesses.

Of the 750 surveys sent, 292 were returned. Results revealed that study pharmacists believed they had more positive attitudes toward individuals with depression and schizophrenia compared with other pharmacists. In comparison to physicians, the study pharmacists perceived themselves as having less negative attitudes toward patients with depression but held greater negative attitudes toward individuals with schizophrenia. More study pharmacists were willing to provide services to patients with asthma in comparison to patients with mental illnesses. Study pharmacists who were more likely to provide services to patients with mental illnesses reported greater perceived value in counseling patients. The study results suggest that pharmacists may be more likely to provide services to patients with mental illnesses, such as depression, if pharmacists hold fewer negative attitudes towards patients with mental illnesses.

Pharmacists' Counseling Behavior Measures

To explore and assess pharmacists' counseling behaviors, researchers have utilized a variety of measures to collect data; these measures have included surveys (Morris, Tabak, & Gondek, 1997) and direct observation of counseling behaviors using trained shoppers (Svarstad, Bultman, & Mount, 2004; Svarstad, Bultman, Mount, & Tabak, 2003; Flynn, Barker, Berger,

Braxton Lloyd, & Brackett, 2009), among others. Measures such as direct observation and interviews have been used to measure actual counseling behaviors whereas measures such as pharmacists and/or patient self-report surveys have been generally used to examine estimates of counseling behaviors (Shah & Chewning, 2010).

There are distinct strengths and weaknesses for the various types of measures used to explore pharmacists' counseling behaviors. For example, survey data collection methods are an economical method that can be used when researchers are interested in estimates of a specific behavior, to collect information regarding the respondent's perceptions and his/her knowledge of a particular topic (Shah & Chewning, 2010); however, survey measures have inherent weaknesses with respondent recall and socially desirable responses (social desirability bias) (Shah & Chewning, 2010; Harvey & MacDonald, 1993). These weaknesses are not applicable to measures used to explore actual counseling behaviors, such as observation measures. Observation measures, however, are not immune from weaknesses. Observer bias, which includes the perceptions of the individuals conducting the observations, limited availability of samples for observation, and the actual effect of pharmacists being observed for research purposes, known as the Hawthorne Effect, are the main weaknesses inherent to observation methods (Shah & Chewning, 2010; Harvey & MacDonald, 1993). Also, in comparison to survey measures, observation methods can be more costly and time consuming since observers need to be trained and additional time must be allotted so the observers can conduct their observations.

Svarstad, Bultman, and Mount (2004) utilized trained shoppers to observe and report pharmacists' actual verbal counseling behaviors. Specifically, the trained shoppers were asked to describe the type and extent of verbal counseling they were provided as patients with new prescriptions among a sample of community pharmacies. Svarstad and colleagues (2004) also

used the data collected by the shoppers to determine the extent to which the pharmacists' counseling behaviors were influenced by state counseling regulations.

Their findings revealed that pharmacist's counseling behaviors varied significantly according to pharmacy busyness. The busyness of the pharmacy reduced the probability of pharmacists communicating with the shoppers, verbal provision of information, and any type of assessment of patients' (shoppers) understanding. Pharmacists' counseling behaviors also varied significantly according to the intensity of the state counseling regulations. The frequency of the provision of any information by pharmacists increased from a low of 40% to a high of 94% as states' counseling regulations increased in intensity (Svarstad et al., 2004). Accordingly, more intensive state regulations increased the likelihood that pharmacists would communicate with the shoppers, provide risk information, conduct assessments of patients' understanding, and provide additional verbal information to patients (Svarstad et al., 2004).

In 2003, Svarstad and colleagues conducted a study to evaluate pharmacist's provision of written prescription information to patient shoppers who visited community pharmacies (Svarstad et al., 2003). Their study utilized trained shoppers acting as patients to present three new prescriptions at community pharmacies in eight states. The results of their study revealed that most of the shoppers (87%) received a written prescription information leaflet; however, shoppers were most likely to receive written prescription information leaflets from chain pharmacies and pharmacies that had more staff. The length of the written prescription information leaflet provided to shoppers and the quality of the information contained in the leaflet varied with the majority of written prescription information leaflets lacking adequate information about contraindications and precautions.

Theoretical Framework

As previously stated, little has been done to examine the relationship between pharmacists' attitudes and their counseling behaviors. This study utilized aspects of the TPB and CSM as theoretical frameworks to help explain the variation in counseling behaviors. The next section explains each theory and the integrated model used in this study.

Theory of Planned Behavior (TPB)

The Theory of Planned Behavior (TPB) is an extension of the Theory of Reasoned Action (TRA). Fishbein originally developed the TRA in 1967, and Ajzen and colleagues proposed adding perceived behavioral control to the TRA theoretical model, which is now known as the TPB (Figure 1); the TPB focuses on theoretical constructs of individual motivational factors as determinants of the likelihood of engaging in a particular behavior (Montaño & Kasprzyk, 2002).

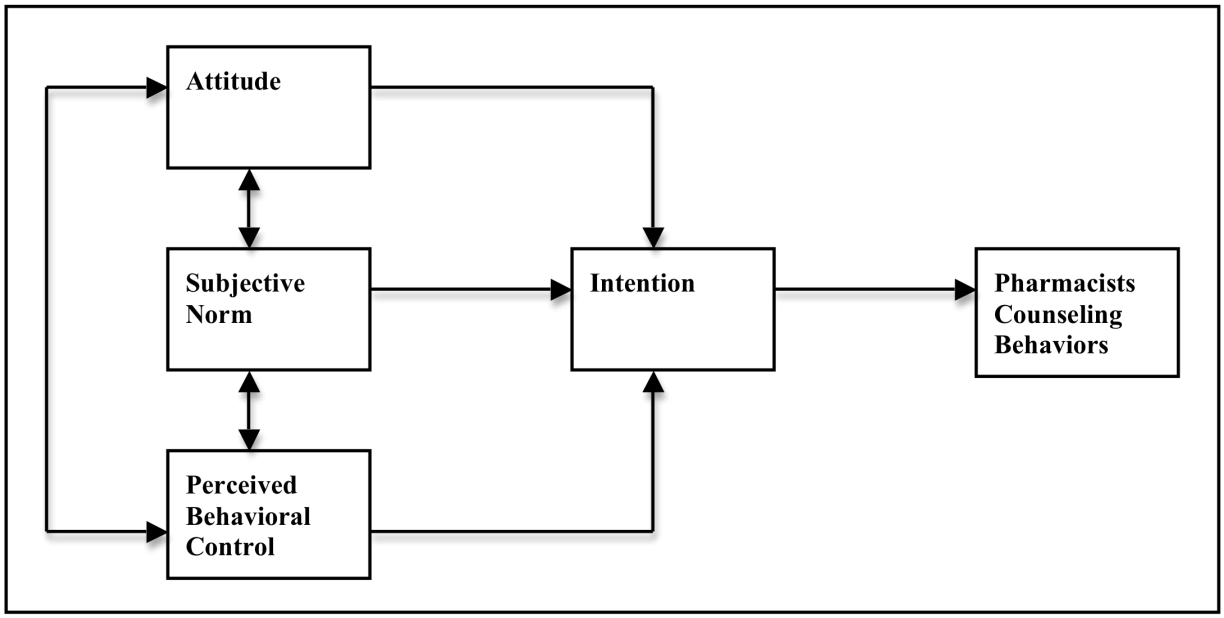
TPB Constructs. To determine the likelihood of the occurrence of a particular behavior, the TPB includes the following constructs: attitude, subjective norm, perceived behavioral control, and behavioral intention (Montaño & Kasprzyk, 2002). The first construct, *attitude*, is defined as an individual's positive or negative feelings about engaging in a particular behavior (Montaño & Kasprzyk, 2002). The second construct in the TPB is *subjective norm*, which is defined as an individual's perception of whether people important to him/her think the behavior should be engaged in (Montaño & Kasprzyk, 2002).

The third construct, *perceived behavioral control*, is described as an individual's perception of the difficulty of engaging in a behavior; perceived behavioral control can be assessed by an individual's (level of) self-efficacy or confidence in his/her ability to engage in a particular behavior (Montaño & Kasprzyk, 2002). Ajzen (1991) has postulated that the perceived behavioral control construct of the TPB is synonymous with an individual's self-efficacy beliefs

(Armitage & Conner, 1999; Ajzen, 2002). The three TPB constructs, *attitude, subjective norm,* and *perceived behavioral control*, lead to the construct of *behavioral intention,* which is defined as an individual's plan to engage in a behavior (Furneau, 2005;Montaño & Kasprzyk, 2002).

The Theory of Planned Behavior (TPB) postulates that an individual's behavior is driven by his/her behavioral intentions; hence, according to the TPB, the most important and direct determinant of an individual's behavior is his/her behavioral intention (Montaño & Kasprzyk, 2002). This assumption is dependent upon the degree to which the behavior is under the person's control, referred to as volutional control (Montaño & Kasprzyk, 2002). An individual's perception of control over his/her behavioral activity combined with his/her intention to engage in the particular behavior is expected to have a direct impact on his/her engagement in the behavior (Montaño & Kasprzyk, 2002).

Figure 1. Theory of Planned Behavior (TPB) Framework



TPB to Explore Healthcare Professionals' Perspectives

The Theory of Planned Behavior (TPB) has been widely used to explore factors that impact health care professionals' beliefs and attitudes about engaging in healthcare-related

behaviors (Walker, Watson, Grimshaw, & Bond, 2004). In 1996, Millstein examined the ability of the TPB to prospectively predict physicians' behaviors regarding educating adolescent patients about the transmission of HIV as well as other sexually transmitted diseases (STDs). Her results revealed that the TPB constructs were related to physicians' intentions to educate adolescents about STDs and they were also related to the subsequent delivery of this service. More specifically, perceived behavioral control had direct effects on behavior and perceived behavioral control interacted with social norms and behavioral intentions. Therefore, the results of her study suggested that the TPB might have relevance for studying and predicting the behavior of health care providers.

In a recent systematic review of TPB studies, Perkins and colleagues (2007) examined the usefulness of the TPB in predicting various types of health care providers' behaviors. Among the studies they reviewed, which includes studies that used the TPB to predict pharmacists' behaviors, their findings suggest that the constructs of the TPB model and the constructs' correlations to intentions and behavior vary based on the specific health-related behavior and the group of healthcare providers being studied. Hence, their findings suggest that the different constructs of the TPB might be used to predict intentions and behaviors among pharmacists.

TPB to Explore Pharmacists' Perspectives

The TPB has also seen limited use in pharmacy research of pharmacists' beliefs and attitudes about and intentions to provide various health care services. For example, Herbert, Urmie, Newland, and Farris (2006) examined the applicability of the TPB to predict the behavioral intentions of pharmacists to provide Medicare medication therapy management services (MTM). The results of their study revealed that pharmacists showed generally positive

intentions to provide MTM. Their results further showed that attitude, subjective norm, and perceived behavioral control were significant predictors of intentions to provide Medicare MTM.

In 2007, Pradel, Obeidat, and Tsoukleris used the TPB as a framework to examine various factors that may influence community pharmacists' provision of pediatric asthma counseling. For their study, they surveyed a random sample of 400 community pharmacists, of which 98 responded. Most respondent pharmacists recognized the importance of providing asthma counseling to children (54%) or their caregivers (68%); however, few reported either demonstrating to children (29%) or their caregivers (47%) or asking children (20%) or their caregivers (22%) to demonstrate how to use the asthma medications. Intention to provide counseling was a significant predictor of pharmacist's provision of counseling to children or their caregivers. However, despite pharmacists reporting having a positive attitude toward providing pediatric asthma counseling, the majority of these pharmacists reported they do not fully engaging in counseling.

Coleman (2003) examined factors that influence pharmacists' communications with patients about antibiotics. Coleman used the TPB to: (a) explore barriers to communication and how changing these barriers might impact pharmacists participation in educational campaigns and (b) identify the best predictor variables for pharmacists' communications with patients about antibiotics. Most pharmacists who participated in the study recognized the importance of their role in educating patients; however, they also recognized the existence of several barriers, which prevented them from engaging in communication with patients. The barriers mentioned in this study included time constraints, lack of appropriate educational materials, and concern of harming existing relationships with physicians. The results showed that pharmacist's communications with patients in general was predicted primarily by more positive attitudes

about pharmacists' roles in communicating with patients and higher self-efficacy. Resistance to engaging in communication with patients was predicted by more negative attitudes (Coleman, 2003).

In summary, the Theory of Planned Behavior (TPB) has been widely used as a theoretical basis from which to explore factors that impact health care professionals' beliefs and attitudes about engaging in healthcare-related behaviors. In addition to its use in exploring primary care providers' (PCPs) behaviors, the TPB has also seen somewhat limited use in research of pharmacists' beliefs and attitudes about and intentions to provide various health care services.

Common Sense Model (CSM)

This study used components of the Common Sense Model to help explain why some pharmacists engage in antidepressant counseling. The Common Sense Model (CSM) of Illness Representations is based on the principles of self-regulation theory; the CSM adds the five dimensions of illness representations to these self-regulation principles (Figure 2). Accordingly, much of the research that has used the CSM has been conducted from the patient-perspective.

The CSM evolved from research conducted on fear communication (Diefenbach et al., 2008). Seminal work conducted by Dollard and Miller (1950) hypothesized that individuals performed recommended behaviors as the result of fear acts being a motivating force. Interventions based on the early Dollard and Miller model used fear-arousing messages that paired visual images of an unpleasant outcome with the recommended behavior change to promote changes in behavior (Diefenbach et al., 2008). However, a major shortcoming of the Dollard and Miller fear-driven reduction model was the lack of accounting for the interaction between fear and action to facilitate behavior change (Leventhal, Brissette, & Leventhal, 2003). In the 1970's, Leventhal developed a new theoretical model – the parallel processing model –

after he recognized the interaction between fear and an action plan, which resulted in behavioral changes (Leventhal, 1970). This parallel processing model posits that the parallel processing of fear messages occur on both cognitive and emotional levels (Diefenbach et al., 2008). The CSM is an extension of this parallel processing model.

Self-regulation theory. For patients' medical health issues, the self-regulation theory has been extensively used to study patients' illness perceptions (Fortune, Barrowclough, & Lobban, 2004). Research conducted on self-regulation models for patients with chronic medical conditions such as diabetes and heart disease have yielded promising results which suggests that the manner in which patients understand their illness has a significant effect on their illness coping strategies and medication adherence (Hampson, Glasgow, & Foster, 1995; Hampson, Glasgow, & Toobert, 1990; Petrie, Weinman, Sharpe, & Buckley, 1996; Brown et al., 2001).

Self-regulation theory views individuals as active problem solvers who are motivated by goals; they constantly gather goal-relevant information and integrate it with their previous knowledge and illness information to form their own subjective assessment of their current health status (Benyamini, 2009). These subjective assessments are then used to guide the coping efforts utilized by patients. As additional information is collected and integrated with previous knowledge, the patient updates his/her assessments and evaluates the relevance to and progress toward his/her goals (Benyamini, 2009). If progress is being achieved by using the current coping strategies, the initial illness representation and the coping strategy selected are thereby affirmed and no changes are made; however, if the progress is deemed unsatisfactory, an individual will select a better suited coping strategy (Benyamini, 2009).

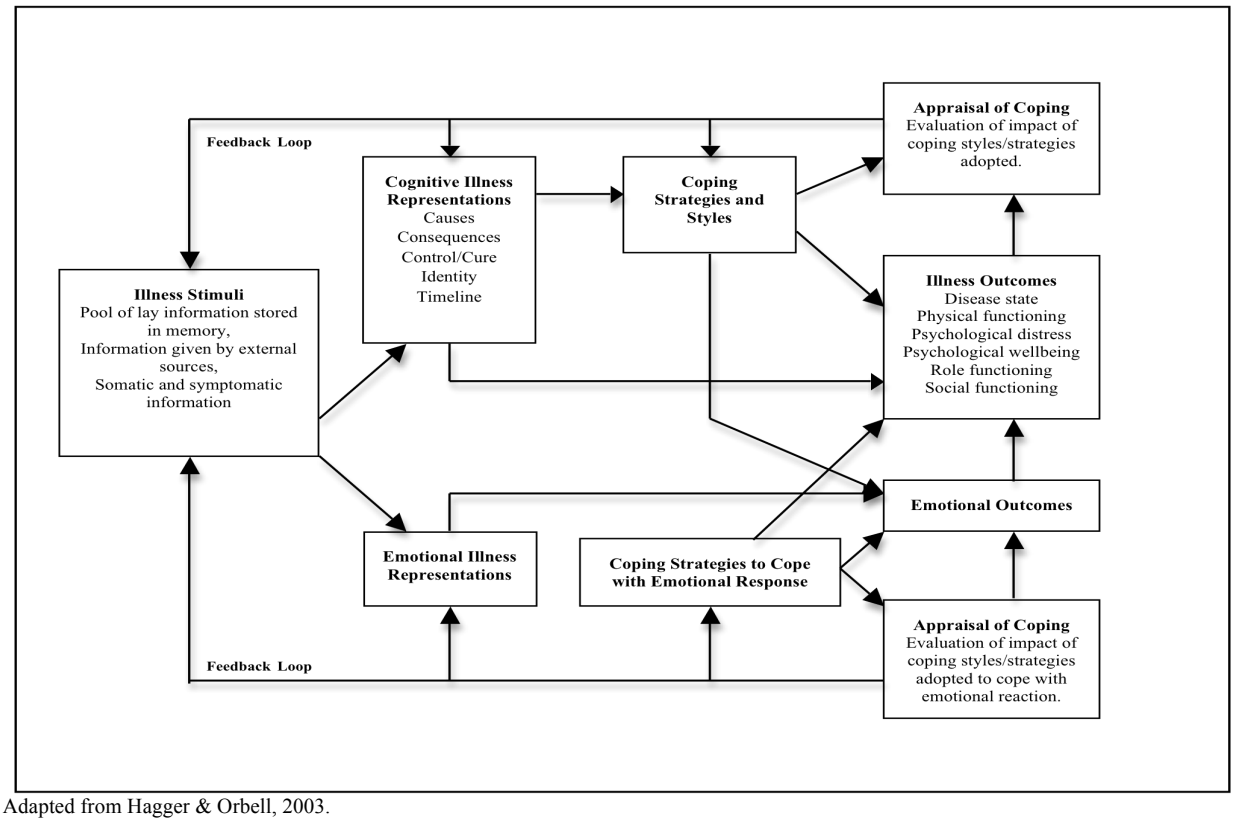
The CSM has two basic assumptions that are derived from Self-Regulation theory: (1) people become common sense scientists when constructing illness representations, and (2) these

illness representations allow for the creation of goals for self-management and suggest actions to be taken for goal attainment and criteria for evaluating the effectiveness of these actions (Leventhal et al., 2003). The CSM has three hierarchical stages that occur at both cognitive and emotional levels: (1) forming illness representations, (2) implementing coping responses, and (3) appraising or monitoring the success or failure of coping efforts (Benyamini, 2009).

CSM Dimensions. The CSM illness representations are comprised of five dimensions: identity, causes, timeline, consequences, and cure and control. The first dimension, *identity*, is an individual's idea regarding the name of his/her condition and the symptoms he/she is experiencing. This dimension is used to assess what the patient thinks the condition is by identifying the symptoms the patient experiences and the name or label the patient assigns to these symptoms (Lobban, Barrowcloth, & Jones, 2003; Prins, Verhaak, Bensing, & van der Meer, 2008). The identity dimension is used to obtain patients' perspectives of their illnesses.

The second dimension, *causes*, examines beliefs about what caused an individual to contract an illness or condition. Previous studies that used the CSM as a framework for exploring patients' perspectives about depression have reported that a majority of patients identified a nonbiological, psychological, or environmental cause for their depression (Prins et al., 2008; Addis, Truax, & Jacobson, 1995; Bann et al., 2004; Goldstein & Rosselli, 2003; Lowe, Schulz, Grafe, & Wilke, 2006). However, not all studies reflect this finding; the results from three studies dissented and reported that patients regard their depression as a stable characteristic caused by biological and physical factors (Prins et al., 2008; Addis et al., 1995; Van Voorhees et al., 2005). Hence, findings have varied in regard to patients' perspectives of the causes of their depression (Addis et al., 1995; Srinvasan, Cohen, & Parikh, 2003). As a result, an ambiguous

Figure 2. Common Sense Model of Self-Regulation (CSM) Framework



Adapted from Hagger & Orbell, 2003.

relationship has been reported to exist between patient perceived causes of depression and patient attrition from antidepressant treatment (Sullivan, 2003).

The third dimension, *timeline*, represents beliefs regarding how long illness symptoms will last; beliefs regarding the duration of symptoms can vary from a short, acute duration which lasts from only a few days to a few weeks, or they may reflect the perception of a lengthier more chronic duration lasting months or even years.

The fourth dimension, *consequences*, pertains to what consequences an individual believes that an infirmed individual might experience in life because of being diagnosed with a specific illness. Patients diagnosed with depression perceive the consequences for many aspects of their lives to be primarily negative because of the depression diagnosis; negative

consequences are expected for employment, obtaining health insurance, and for social relationships, including friendships (Roeloffs et al., 2003).

The fifth and final dimension is *cure and control*, which consists of beliefs about the extent to which the condition can be controlled and/or cured by an individual or by treatments such as medications. This dimension is important for depression research because it can be used to assess the patients' perceptions of the need for antidepressant medication treatment, perceptions of the efficacy of the antidepressants, beliefs about antidepressants, and patients' personal preferences for different types of depression treatment (i.e., antidepressant medication, psychotherapy, or a combination) (Prins et al., 2008). This dimension may also be helpful to examine health care providers' perspectives of the overall extent to which an illness can be cured and/or controlled by the patient and/or the patient's prescribed treatment regimen as well as the health care providers role in the cure and control of patients' illnesses.

CSM in Depression Research

Determining how patients define and understand depression and its consequences on their health is a key factor in understanding how they manage their depression (Brown et al., 2001). There is evidence to support the notion that patients have a poor level of knowledge about the symptoms of mental health disorders, which is likely to lead to a greater misunderstanding of the symptoms and poor outcomes (Lauber, Nordt, Falcato, & Rossler, 2003; Petrie, Broadbent, & Kydd, 2008). Brown and colleagues (2001) examined primary care patients' personal illness perceptions of depression to determine if these illness perceptions are associated with depression coping strategies and treatment-related behaviors. Their findings, although preliminary, indicate that patients' understanding of depression and its consequences are associated with how they choose to manage their depression. Hence, this preliminary finding suggests that patients'

perspectives about their depression may play a key role in their use of self-management strategies.

Brown and colleagues (2007) evaluated the applicability and clinical utility of the CSM in depressed primary care patients and their findings suggest that specific coping strategies can have different impacts on functioning, depending on the perceived cause of depression. In addition, their findings indicate that the CSM provides evidence for the identification of potentially modifiable beliefs and coping behaviors, which can be targeted for intervention to improve depressive symptoms. Fortune, Barrowclough, and Lobban (2004) examined patient illness models of depression to assess whether the five dimensions of the CSM are relevant and to compare depression models with those for medical illnesses. Findings from their study support their hypothesis that patients' illness models for depression are similar in both content and structure to patient illness models for medical illnesses. Hence, the results of this study provide support for the idea that models of illnesses can be reliably measured in patients with depression.

Of all the patient characteristics that have been shown to impact treatment adherence, the patient's attitude and beliefs toward the antidepressant medication is one of the most important factors (Frank et al., 1995; Katon, Von Korff, Lin, Bush, & Ormel, 1992). Depression may be associated with poor treatment adherence and outcomes because patients may not be aware of the potential benefit of treatment and adherence to that treatment (DiMatteo, Lepper, & Croghan, 2000). Moreover, depression has been shown to reduce patient reported satisfaction with care, which can in turn impact adherence (Ford, 2008; Sherbourne, Hays, Ordway, DiMatteo, & Kravitz, 1992).

Accordingly, the CSM provides a useful theoretical framework from which to understand patients' adherence to their antidepressant medication regimens (Brown et al., 2005). The CSM

suggests that patients' health-related behaviors are coping behaviors that are strongly influenced by patients' beliefs and illness representations. Research has shown that patients' illness beliefs are strongly associated with medication adherence (Horne, Pearson, Leake, Fisher, & Weinman, 1999) and illness coping behaviors (Hampson et al., 1990; Hampson et al., 1995; Hampson, Glasgow, & Zeiss, 1994).

The CSM recognizes the subjective experience of depression and how an individual's perception of a symptom of depression or an adverse effect of the antidepressant medication may differ from one patient diagnosed with depression to another. There may be variations in patients' perceptions of their diagnosis of depression and this may produce different effects on patient self-monitoring, patient adherence and outcomes. The CSM is a practical theoretical framework for studying and understanding individuals' behavioral and emotional responses to the diagnosis of depression, the prescribed antidepressant treatment regimen, and any experienced adverse effects.

CSM for Examining Healthcare Professionals' Illness Perceptions

The Common Sense Model (CSM) has been widely used to examine the patient perspective; however, there have been very few attempts to use the CSM to examine healthcare providers' perspectives of illnesses. Five dimensions of providers' perceptions of illnesses can be used to explain their behaviors. For example, if providers believe that an illness can be controlled and/or cured by treatments such as medications, it is likely that the providers may act to ensure treatment adherence. In addition, if providers believe that illness symptoms are chronic, such as symptoms of diabetes, it increases the likelihood that providers may act to ensure patients receive proper illness and/or medication management. Likewise, if providers perceive an illness to be a more debilitating and serious condition, it is likely that this perception will prompt

providers to act to ensure patients understand their conditions and the purpose of their prescribed medications.

In a study conducted by Barrowclough, Lobban, Hatton, and Quinn (2001), the illness perceptions of caregivers for relatives who had been diagnosed with schizophrenia were examined. More specifically, their study investigated caregivers' illness perceptions of schizophrenia to determine the influence of these responses to family members with schizophrenia. Three of the five illness representation dimensions (control/cure, consequences, and timeline) were examined for forty-seven caregivers. The caregivers provided responses to questions about the consequences of their relatives having schizophrenia, the control/cure of schizophrenia, the control/cure of schizophrenia by the caregiver, and the timeline of schizophrenia, either episodic or chronic in nature. Their findings suggest that caregivers' illness perceptions of schizophrenia may have important implications for patients, since caregivers' responses can be an important mediator of the outcome of schizophrenia.

Heijmans and colleagues (2001) examined differences in illness perceptions among patients and primary care providers (PCPs) to determine the impact of these differences on patient health status and health care usage. The researchers randomly selected 56 primary care providers (PCPs) practicing in the Netherlands and recruited 580 patients through these 56 PCPs. Of the 580 patients, 392 were diagnosed with diabetes and 188 were diagnosed with osteoarthritis. Patients and their PCPs were asked questions pertaining to the extent they felt the illness (diabetes or osteoarthritis) was progressive, life threatening, painful, and controllable, and the impact of the illness on their social, physical, and mental functioning. The results of their study revealed that differences exist between patients and their PCPs perspectives (of diabetes and osteoarthritis) and these differences were associated with a worse health status of patients

and increased health care usage. The literature review was unable to identify any additional research that used the CSM to examine providers' perspectives of illnesses.

To summarize, the Common Sense Model (CSM) has been widely used as a theoretical basis from which to study the patient perspective of both physical and mental health issues; however, there have been very few studies that have used the Common Sense Model (CSM) framework to examine health care providers' perspectives of illnesses. Further, as previously stated, research has demonstrated that problems exist when treating depression solely in primary care. Therefore, pharmacists are in an excellent position to help address these problems through the provision of antidepressant counseling. Unfortunately, many pharmacists do not engage in antidepressant counseling and very little research has been conducted to investigate why this phenomenon is occurring. Accordingly, this study will be the first to use components of the CSM framework to investigate health care providers' perspectives of depression.

The CSM components were selected to be included in this current study to examine pharmacists' illness perceptions of depression because of a couple reasons. First, the CSM captures both cognitive and emotional processes and, second, it views behavioral decisions not as static events but rather as dynamic processes that may change over time (Cameron & Leventhal, 2003). For example, unless pharmacists have had personal experiences with a particular illness, their primary source for information on which their illness perceptions about the specific illness are initially based is their medical knowledge and medication expertise (Weinman et al., 2003). However, as pharmacists interact and communicate with patients diagnosed with and receiving treatment for the illness, their illness perceptions may change to reflect a greater (cognitive and emotional) understanding of the illness (Weinman et al., 2003).

Integrated Theoretical Model

Rationale. This study utilizes aspects of the Theory of Planned Behavior (TPB) and the Common Sense Model (CSM) (Figure 3). Each theory makes unique contributions towards predicting individuals' behavioral decisions. The first theory, the TPB, postulates that an individual's attitude, subjective norm, and perception of control over his/her behavior can explain his/her intention to engage in the particular behavior and the intention would then have a direct impact on his/her engagement in the behavior (Montaño & Kasprzyk, 2002). The second theory, the CSM, has two basic assumptions; the first assumption is that individuals become common sense scientists when constructing illness representations. The second is that these illness representations allow for the creation of goals for self-management, suggest actions to be taken for goal attainment and criteria for evaluating the effectiveness of these actions (Leventhal et al., 2003). By combining aspects of each theory into a new, integrated theoretical model, it may provide a more comprehensive theoretically based explanation for pharmacists' engagement in and adoption of antidepressant counseling. In the following paragraphs, explanations of how the integrated model was developed are presented.

For the current study, the TPB construct *attitude* was modified to be more illness specific by using the CSM illness perceptions of depression. This modification was made because depression is a unique mental health illness and the CSM examines five dimensions that comprise perceptions of depression in comparison to the TPB construct attitude, which primarily examines positive and negative feelings about the illness. Accordingly, using the CSM to ask specific questions that capture various aspects of illness perceptions of depression will help to obtain a better understanding of the impact of each aspect of the illness on pharmacists' behaviors.

The TPB construct *subjective norm* was also modified for use in the proposed model. Subjective norm influences can be derived from peers, the organization (management) and the environment (prescribers, patients). Herbert and colleagues (2006) examined subjective norms as environmental and organizational factors. Specifically, they examined community pharmacists' perceptions of patient's, physician's, and management's approval of them providing Medicare MTM. Their results showed that store management (83%) had the most influence followed by patients (78%) and physicians (68%). Only about one-third of pharmacists (32%) recognized other pharmacists as influencing their decision to provide Medicare MTM.

Accordingly, subjective norm influences from management, patients and physicians regarding antidepressant counseling were included in this study; influence from peers was not included because this practice has not yet been widely adopted to create such normative pressure. Specifically, influences exerted by management are conceptualized as organizational barriers and facilitators while influences from patients and prescribers are conceptualized as environmental barriers and facilitators. Hence, to better understand the impact of subjective norm on pharmacists' antidepressant counseling behaviors, it is important to examine both organizational and environmental factors that may impact the pharmacist's decision.

Ajzen (2002) postulated that perceived behavioral control could be considered a single latent variable comprised of two separable belief dimensions, beliefs about self-efficacy and beliefs about controllability (Ajzen, 2002). According to Ajzen (2002), "It can be seen that perceived behavioral control and self-efficacy are quite similar: both are concerned with [an individual's] perceived ability to perform a behavior" (Ajzen, 2002). Accordingly, the construct *perceived behavioral control* was included in the model; self-efficacy questions, which asked pharmacists about their confidence with their knowledge of depression medication therapy and

their communication skills for counseling patients with depression, were inserted into the questionnaire as measures of the self-efficacy dimension of pharmacist's perceived behavioral control. Pharmacists' self-efficacy for engaging in antidepressant counseling was also assessed by asking how comfortable they are counseling patients with depression. Moreover, pharmacists were asked about their confidence in communicating with prescribers about patient-related recommendations.

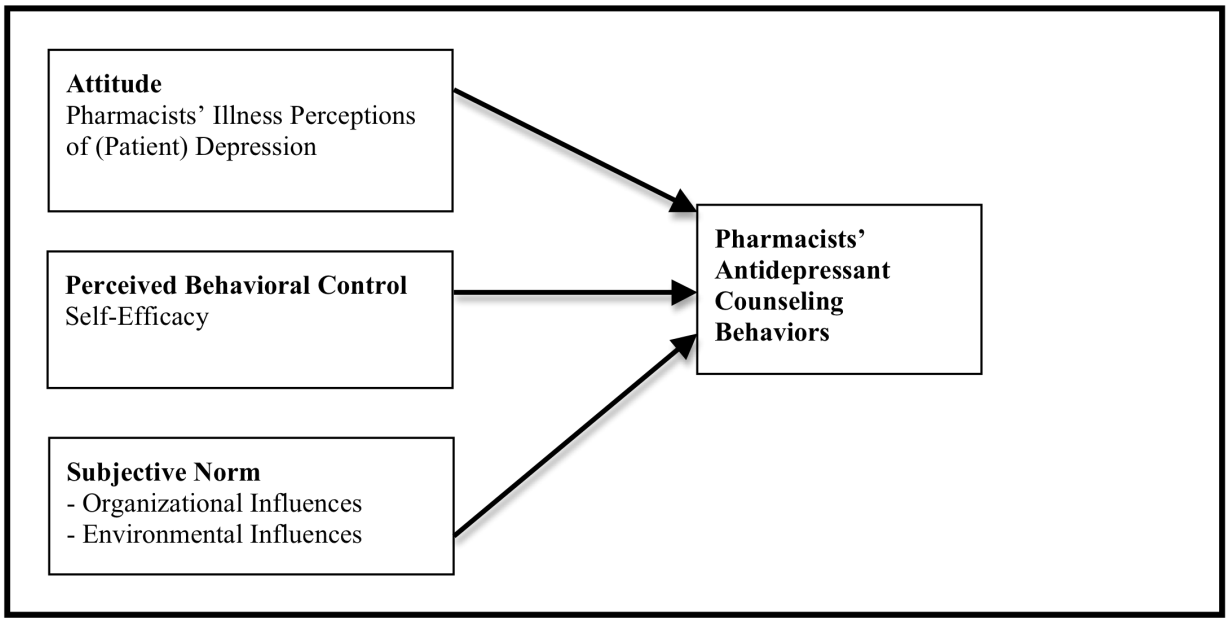
Lastly, the TPB construct *intention* is generally used to examine an individual's intention to engage in a specific behavior that has not yet transpired and the intention is the best possible measure used to predict actual behavior (Montaño & Kasprzyk, 2008; Herbert, Urmie, Newland, & Farris, 2006; Sutton, 1998). However, since pharmacists are already engaging in antidepressant counseling behaviors to a varying degree, it was deemed unnecessary to include this intention construct in the proposed model. Instead, this study assessed the relationship between independent variables (pharmacists' attitude, behavioral control, subjective norm) and self-reported pharmacists' behaviors.

Proposed relationships. Based on the CSM, this study posits that pharmacists' perceptions of patient depression will influence pharmacists' engagement in antidepressant counseling. Specifically, the first relationship in the integrated model will examine the impact of pharmacists' perceptions of depression (attitude), based on three of five dimensions of the CSM (consequences, control/cure, and timeline), on pharmacists' engagement in antidepressant counseling.

Based on aspects of the TPB, this study posits that pharmacists' self-efficacy will have an impact on pharmacists' engagement in antidepressant counseling. More specifically, the second relationship in the integrated model will examine the impact of pharmacists' self-efficacy as it

relates to the provision of antidepressant counseling. In Farris and Schopflocher's (1999) study of community pharmacists adoption of and engagement in pharmaceutical care, results revealed that perceived behavioral control had a direct impact on pharmacists' beliefs about the outcomes of their pharmaceutical care behaviors. Further, their results revealed that self-efficacy was the only direct predictor of engagement in pharmaceutical care behaviors. Hence, the control that pharmacists' perceive they have over their engagement in patient care activities at their practice site may be critical to their adoption decisions.

Figure 3. Proposed Model of Pharmacists' Antidepressant Counseling



Self-efficacy is an individual's perception of his/her ability to engage in or carry out a specific behavior or activity (Planas, 2010), and it has been shown to be a strong predictor of behavior for a variety of behaviors and in various settings (Guirguis, Chewning, & Kieser, 2009; Hudmon, Prokhorov, & Corelli, 2006; Morken, Fossum, Horn, & Granas, 2008; Odedina, Hepler, Segal, & Miller, 1997). Self-efficacy is typically measured through the use of multi-item scales, which assess an individual's confidence in his/her ability to carry out a specific behavior

or activity (Martin, Chui, Thorpe, Mott, & Kreling, 2010; Hudmon et al., 2006; Morken et al., 2008; Odedina et al., 1997).

Among pharmacy research, Guirguis, Chewning, & Kieser (2009) examined predictors of pharmacy students' intentions to monitor diabetes. Specifically, they surveyed the entire class of P-4 professional students at the University of Wisconsin-Madison between May 2005-May 2006; they utilized a 7-point self-efficacy scale to assess how sure pharmacy students were that they could ask patients about monitoring their diabetes. Responses ranged from not at all sure to extremely sure. Their results showed that self-efficacy consistently predicted both diabetes monitoring intentions and diabetes monitoring behaviors.

Another study assessed pharmacists' attitudes and current practices regarding tobacco cessation counseling. Hudmon and colleagues (2006) surveyed all licensed pharmacists in four Northern California counties between 1999-2000 to identify predictors of pharmacists' counseling for tobacco cessation. They utilized a 5-point self-efficacy scale, which assessed pharmacist confidence for 12 specific activities of tobacco cessation counseling. Their results revealed that self-efficacy was a significant predictor of pharmacist engagement in tobacco cessation counseling activities (Hudmon et al., 2006). In fact, their results showed that pharmacists self-efficacy for counseling was a better predictor of pharmacist engagement in tobacco cessation counseling than prior formal training in tobacco cessation counseling (Hudmon et al., 2006).

Self-efficacy has also been identified as the main determinant of whether pharmacists engage in counseling patients on herbs and dietary supplements (Lin, 2008). More specifically, Lin (2008) surveyed pharmacists to assess the extent to which their knowledge, attitudes, and self-efficacy contributed to their engagement in herbs and dietary supplement-related patient

counseling. Lin (2008) utilized a 5-item confidence scale and results revealed that pharmacists' self-efficacy was the main predictor of pharmacist's engagement in herbs and dietary supplement-related patient counseling behaviors. Hence, perceptions of self-efficacy have been shown to directly predict pharmacist's engagement in and provision of counseling to patients (Mason, 1983; Hudmon et al., 2006; Guirguis et al., 2009; Planas, 2010; Lin, 2008).

The third and final relationship in the integrated model will examine the impact of organizational and environmental influences (subjective norm) on the provision of antidepressant counseling. Pradel and colleagues (2007) assessed the effect of subjective norm by asking pharmacists about the likelihood of individuals external (children with asthma and their parents) and internal (management) to the pharmacy influencing their decisions to provide asthma counseling to pediatric patients. Their results revealed that parents of children with asthma (71%) and pharmacy management (44%) were quite/very likely to influence their counseling decisions. Hence, research has shown that subjective norm viewed as perceived facilitators and/or barriers could greatly impact engagement in a particular behavior (Pradel, Obeidat, & Tsoukleris, 2007; Mason, 1983).

Summary of the Literature Review

According to the literature review that was conducted and presented in this chapter, several conclusions can be made regarding the problem of depression and nonadherence to antidepressants. Research has shown that depression is a relatively common and serious mental health disorder with a significant and increasing prevalence, and there is the expectation that it will become the second leading disease burden worldwide in the next decade. Hence, depression is a serious illness that can be a major contributing factor to poor patient outcomes. Effective antidepressant medications have been developed and are an accessible treatment mechanism for

alleviating depressive symptoms. However, despite availability of these effective antidepressant medications, there remains a high rate of medication nonadherence. Nonadherence to antidepressant regimens is a major contributing factor to higher relapse rates and poor treatment outcomes. There is not one predominant reason that is indicated for patient nonadherence; patients are nonadherent to antidepressants for a variety of reasons including costly prescriptions, adverse side effects, and lack of positive effect.

Despite the already high and increasing prevalence of depression and the high rates of nonadherence with antidepressants, not all patients who suffer with depression will receive proper treatment and follow-up care by their primary care providers. This literature review has shown that there are significant limitations to the diagnosis and treatment of depression in primary care. For instance, nearly half of all patients who present with symptoms of depression in the primary care setting remain and will remain undiagnosed and untreated; even if patients receive a diagnosis of depression and are prescribed antidepressants for treatment, less than 20% will receive proper follow-up and monitoring of treatment efficacy by their primacy care physicians. Considering the personal and economic impacts of a serious illness such as depression, this disparity in depression care and treatment is unacceptable and extremely disconcerting.

This problem of lack of proper care, monitoring, and follow-up for patients with depression can be approached for study in a variety of ways; this study provides one such way to examine this problem. Pharmacists are in an excellent position to improve outcomes for patients with depression by encouraging adherence, monitoring and managing treatment efficacy and adverse effects, and making recommendations to prescribers regarding currently prescribed antidepressant medications, particularly when critical medication changes are indicated. At this

time, little is known regarding which factors impact pharmacist's engagement in antidepressant counseling. Pharmacist provided antidepressant counseling is not a widely adopted practice despite pharmacists expertise in antidepressant medication management; therefore, better understanding of the influence of pharmacists' perceptions of depression, pharmacists' self efficacy, and practice barriers/facilitators on pharmacist's engagement in antidepressant counseling may help facilitate the adoption of this important practice.

Aspects of the Theory of Planned Behavior and Common Sense Model were selected as the theoretical frameworks from which to approach the problem. Each of these theories (TPB and CSM) complements one another and; thus, makes unique contributions towards predicting individuals' behavioral decisions. Combining aspects of each theory into a new, integrated theoretical model might provide a more comprehensive theoretically-based explanation for pharmacists' engagement in and adoption of antidepressant counseling.

Chapter 3. Methods

Research Methodology

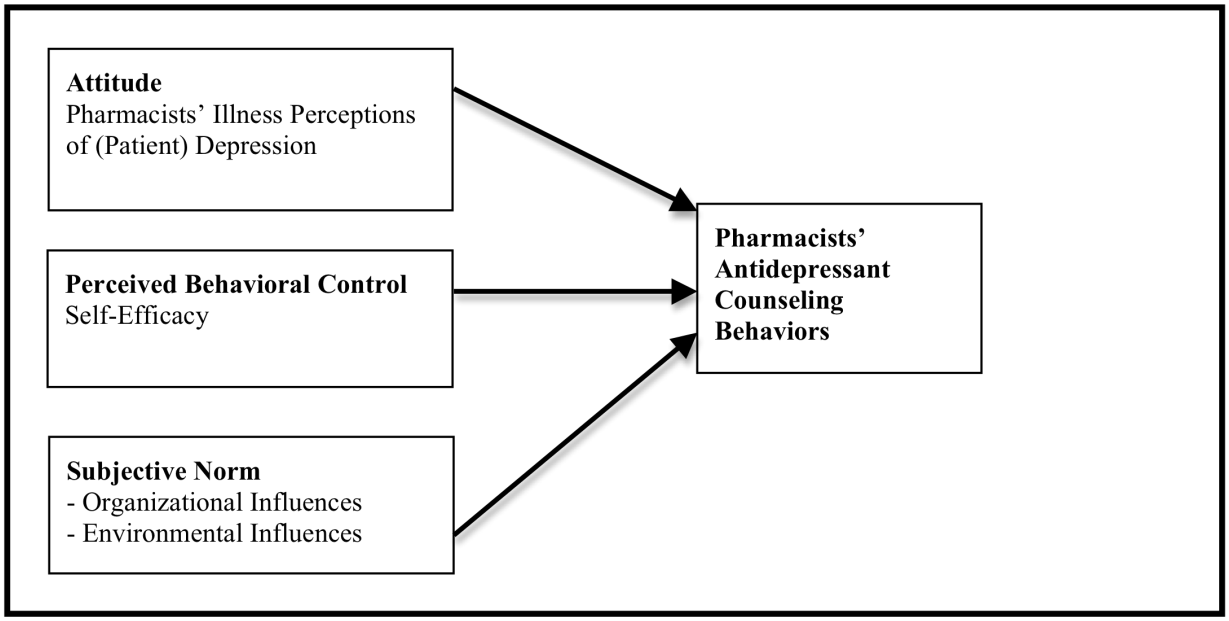
Using aspects of the Common Sense Model (CSM) of Illness Representations and the Theory of Planned Behavior (TPB) as the theoretical framework, the primary objective of this study was to identify and examine factors that are important to pharmacists' engagement in antidepressant counseling behaviors. More specifically, according to the CSM, this study posits that pharmacists' perceptions of patient depression will influence pharmacists' antidepressant counseling behaviors; hence, the relationship between pharmacists' illness perceptions and pharmacists' antidepressant counseling behaviors was examined. Based on aspects of the TPB, this study assessed the impact of pharmacists' self-efficacy and organizational and environmental influences on pharmacists' antidepressant counseling behaviors.

Research Questions and Study Hypotheses

The primary goal of this study was to identify and examine factors that are important to pharmacists' engagement in antidepressant counseling. This study used aspects of the Common Sense Model (CSM) of Illness Representations and the Theory of Planned Behavior (TPB) as guidance to postulate a proposed model of factors that may impact pharmacist antidepressant counseling behaviors (Figure 4). Components of the CSM were added to aspects of the TPB; the CSM has been applicable with patients' perspectives since patients have control over their behaviors. However, this is not true among community pharmacists. In the case of pharmacists,

certain behaviors are not entirely under their control, such as engaging or not engaging in the provision of antidepressant counseling, which may be due to organizational and/or environmental factors. The specific research questions and study hypotheses addressed for this study are provided next.

Figure 4. Proposed Model of Pharmacists' Antidepressant Counseling



Research Questions

The research questions addressed for this dissertation study are as follows:

RQ1. What is the relationship between pharmacists' illness perceptions (attitude) of depression and pharmacists' antidepressant counseling behaviors?

RQ2. What is the relationship between self-efficacy and pharmacists' antidepressant counseling behaviors?

RQ3. What is the relationship between organizational influences and pharmacists' antidepressant counseling behaviors ?

RQ4. What is the relationship between environmental influences and pharmacists'

antidepressant counseling behaviors ?

RQ5. What impact does pharmacists' illness perceptions of depression, self-efficacy, and organizational and environmental influences have on pharmacists' antidepressant counseling behaviors?

Study Hypotheses

For each hypothesis listed below, two parallel analyses were conducted for each type of counseling behaviors, namely reassurance and antidepressant monitoring.

H1: Pharmacists' illness perceptions of depression will have a relationship with pharmacists' antidepressant counseling behaviors.

H2: Self-efficacy will have a positive relationship with pharmacists' antidepressant counseling behaviors.

H3: Organizational influences will have a relationship with pharmacists' antidepressant counseling behaviors.

H4: Environmental influences will have a relationship with pharmacists' antidepressant counseling behaviors.

H5: Pharmacists' illness perceptions of depression, self-efficacy, and organizational and environmental influences will have a relationship with pharmacists' antidepressant counseling behaviors.

Overview of the Study Design

To test the above hypotheses, this study used a mixed-method, cross-sectional descriptive design. The study had two stages: (1) questionnaire development and (2) questionnaire administration. Since the goal of this study was to identify and examine factors that are important to pharmacists' antidepressant medication counseling behaviors and due to Alabama currently

being ranked as the Southeastern state with the second highest rate of patients with depression (Centers for Disease Control and Prevention [CDC], 2010), Alabama community pharmacies were chosen as the sampling frame. From this sampling frame, a random sample of 600 Alabama community pharmacies was selected to receive a 5-page questionnaire to be completed by a full time pharmacist at each pharmacy.

A modified Dillman method was used to contact potential participants; in all, there were three U.S.P.S. first-class mail contacts made with selected pharmacies. A paper questionnaire and an identical electronic version of the questionnaire were used to collect data relevant to the variables of interest. Non-response bias investigation was conducted to analyze for differences among early responders in comparison to later responders.

Stage I - Questionnaire Development

The questionnaire was developed using a combination of validated and newly developed measures that were used to collect data about pharmacists' counseling behaviors and their perceptions regarding patient depression (see Appendix E). The questionnaire was designed to be completed by community pharmacists at a time and place of their convenience, without requiring any assistance from the researcher. Some of the questions were implemented directly from previously established and validated scales while other questions were modified to be appropriate for the purposes of this study. In the absence of previously developed and validated scales, additional questions were developed and added to the questionnaire as needed to address the goals of the study. The questions included in the questionnaire can be categorized into five main sections, which are described next.

Section I: Pharmacists' illness perceptions of patient depression. This section was designed to measure pharmacists' perceptions of patient depression on three dimensions of the

Common Sense Model of Illness Representations (CSM) of health care providers. These dimensions assessed pharmacists' perceptions of the consequences of a patient having depression; the control and/or curability of patient depression; the control and/or curability of the patient depression by pharmacists; and pharmacists' perceptions of depression as a chronic and/or episodic illness.

Section II: Pharmacist self-efficacy for providing antidepressant counseling. To measure pharmacists' perceived behavioral control for counseling patients prescribed antidepressants, pharmacists were asked questions about their confidence with their knowledge about antidepressant therapy for depression, communication skills for counseling patients with depression and communicating with prescribers about recommendations for patients prescribed antidepressants. They were also asked how comfortable they feel counseling patients with depression.

Section III: Organizational and environmental influences. In this section, pharmacists were asked about factors, which are internal and external to the pharmacy, that might impact their engagement in antidepressant counseling at their practice sites. Pharmacists were asked questions pertaining to two barrier/facilitator subcategories: organizational influences and environmental influences.

Section IV: Pharmacists' antidepressant counseling behaviors. This section was designed to measure the extent of pharmacist's current antidepressant counseling behaviors, if any. In this section of the questionnaire, antidepressant counseling refers to the provision of pharmacist evaluation of patient illness and medication knowledge, monitoring of drug efficacy and side effects, ensuring adherence, and working with prescribers to modify drug therapy, when

needed. As such, this section consists of questions pertaining to pharmacists' counseling behaviors.

Section V: Pharmacist and pharmacy characteristics. This section asked for information about the respondent pharmacist and his/her practice site. These questions asked pharmacists about their practice site service orientation, if their practice site provided MTM services in 2010, demographics of the practice site and the respondent pharmacist, average prescription and antidepressant prescription volume per day, number of staff pharmacists, and number of pharmacists who currently provide antidepressant counseling at the pharmacy. These measures may be used as control variables.

Pharmacists' intentions to provide antidepressant counseling. A multi-item scale was designed to assess pharmacist's intention or future plans to provide antidepressant counseling to patients *in addition to* the current counseling being provided at their practice sites. Items that examined pharmacists' intentions to engage in antidepressant counseling behaviors (Questions 5a-5d) were included in the questionnaire to assess pharmacists' intentions or future plans to provide antidepressant counseling to patients *in addition to* the current counseling being provided at their practice sites; however, these items are not included in the analysis of the proposed theoretical model because the intention construct is generally used to examine an individual's intention to engage in a specific behavior that has not yet transpired. Hence, since pharmacists are already engaging in antidepressant counseling behaviors to a varying degree, it was deemed inappropriate to include the intention construct in the proposed model.

All items included in this scale were slightly modified from a validated scale developed by Herbert, Urmie, Newland, and Farris (2006), which used the theory of planned behavior (TPB) as a framework to measure the behavioral intention of pharmacists to provide Medicare

medication therapy management services (MTM). Responses were measured on a five-point *disagree/agree* Likert type scale. The original scale was validated with 203 pharmacists to measure intent to provide Medicare MTM. For the six-item intention scale, Cronbach's alpha, was 0.88.

After the questionnaire for the current study was pretested, two of the original six items in the scale were removed from the questionnaire due to concern that these items were not applicable to the provision of antidepressant counseling. The removed items were: (1) I plan to actively enroll eligible patients at my pharmacy in antidepressant counseling programs and (2) if necessary, I will contact insurance companies to arrange for antidepressant counseling to be provided at my pharmacy. In an effort to keep the overall structure of the items from the original scale, the modifications made to these items were: the replacement of the words "Medicare MTM" with the words "antidepressant counseling" to make the items more applicable to the current study and for clarity of two items, the phrases "in addition to the current counseling provided to patients" (1) "with depression" and (2) "with newly prescribed antidepressants" were added.

A four-item scale was developed to measure pharmacists' intentions to provide antidepressant counseling in addition to the current counseling provided at their pharmacy. Responses were measured on a five-point *disagree/agree* Likert type scale. Pharmacists were asked to indicate their level of agreement/disagreement with statements about their future plans to provide antidepressant counseling in addition to the current counseling provided at their pharmacy. The statements about future plans that pharmacists were asked to indicate their level of agreement/disagreement with included: (a) I plan to speak with pharmacy/store management about offering antidepressant counseling in addition to the current counseling provided to

patients with newly prescribed antidepressants, (b) I will actively work to ensure a role for pharmacists in the provision of antidepressant counseling to patients with depression, (c) I intend to provide antidepressant counseling in addition to the current counseling provided to patients with depression, and (d) I will work to ensure that adequate reimbursement is established for the provision of antidepressant counseling at my pharmacy.

Variables Included in the Questionnaire

Operational definitions of study variables are presented in Table 1. These variables were used to test the hypotheses presented at the beginning of this chapter.

Section I – Pharmacists' illness perceptions of patient depression (Questions 1a-1r). All items included in section one of the questionnaire were slightly modified from a validated scale developed by Barrowclough, Lobban, Hatton, and Quinn (2001) to measure caregivers' illness perceptions of close family members with schizophrenia. In an effort to keep the overall structure of the items from the original scale, the only modification made to the items measuring illness perceptions was the replacement of the word "illness" with the word "depression" to make the items more depression illness specific.

CSM illness perception – Consequences (Questions 1a-1g). A seven-item scale was used to measure pharmacists' perceptions of the consequences of patients having depression. Responses were measured on a five-point *disagree/agree* Likert type scale. The original scale was validated with 47 caregivers of a close family member who had schizophrenia. For the seven-item consequences scale, Cronbach's alpha, the measure of internal consistency, reported by Barrowclough and colleagues (2001) was 0.71.

CSM illness perception – Control/Cure of illness (Questions 1h-1l). A five-item scale was used to measure pharmacists' perceptions of the control and/or curability of patients'

depression. Responses were measured on a five-point *disagree/agree* Likert type scale. For the five-item control/cure scale, Cronbach's alpha was 0.68.

CSM illness perception – Control/Cure by HCP (Questions 1m-1n). A two-item scale was used to measure pharmacists' perceptions of pharmacists' control and/or curability of patients' depression. Responses were measured on a five-point *disagree/agree* Likert type scale. For the two-item control/cure by pharmacists scale, Cronbach's alpha was 0.61.

CSM illness perception – Timeline [Chronic] (Questions 1o-1p). A two-item scale was used to measure pharmacists' perceptions of the chronic nature (timeline) of patients' depression. Responses were measured on a five-point *disagree/agree* Likert type scale. For the two-item chronic timeline perception scale, Cronbach's alpha was 0.53.

CSM illness perception – Timeline [Episodic] (Questions 1q-1r). A two-item scale was used to measure pharmacists' perceptions of the episodic nature (timeline) of patients' depression. Responses were measured on a five-point *disagree/agree* Likert type scale. For the two-item episodic timeline perception scale, Cronbach's alpha was 0.60.

Section II: Pharmacist self-efficacy for providing antidepressant counseling (Questions 4d-4g). Items for section two were developed from a survey study conducted by Scheerder, De Coster, and Van Audenhove (2008) that examined pharmacists' attitudes, current practices, and barriers to providing care to patients with depression. Since this scale was already developed for depression, no modifications were made. A four-item confidence scale was developed to measure pharmacists' perceived self-efficacy for the provision of antidepressant counseling. Responses were measured on a five-point *disagree/agree* Likert type scale. Respondents were asked to indicate their level of agreement/disagreement with four statements about current personal factors that may affect their provision of antidepressant counseling

including questions about their confidence with: (a) their current level of knowledge in medication therapy for depression, (b) their communication skills for counseling patients with depression, (c) communicating with prescribers about recommendations for their mutual patients and (d) feeling comfortable counseling patients with depression. Cronbach's alpha reported for the original total depression care scale was 0.76.

Section III: Organizational and environmental influences. (Questions 4a-4c, 4h-4k). Items for section three were developed from two sources. The first source was a survey study conducted by Scheerder, De Coster, and Van Audenhove (2008) that examined pharmacists' attitudes, current practices, and barriers/facilitators to providing care to patients with depression in Belgium; in this study, pharmacists were asked to indicate perceived barriers from a list of pharmacist, patient, and system-level factors to pharmacist's roles in depression care. The second source was a survey study conducted by Gardner, Murphy, Woodman, and Connelly (2001) that asked pharmacists to rank the top three barriers from a list of seven barriers to effective communication with antidepressant users. Barriers and facilitators in this study were categorized into the following two subconstructs: organizational influences and environmental influences, which were used to measure their effect on pharmacists' antidepressant counseling behaviors.

Organizational influences (Questions 4a-4c). A three-item scale was developed to measure organizational influences on pharmacists' provision of antidepressant counseling. Items in this scale were adapted from Scheerder, De Coster, and Van Audenhove (2008). Responses were measured on a five-point *disagree/agree* Likert type scale. Pharmacists were asked to indicate their level of agreement/disagreement with the following statements about current factors that may affect their provision of antidepressant counseling: (a) my time is sufficient to provide individual attention to patients prescribed antidepressants, (b) the privacy area in my

pharmacy is adequate to provide antidepressant counseling, and (c) the patient profile information available to me is sufficient to manage antidepressant therapy.

Environmental influences (Questions 4h-4k). A four-item scale was developed to measure environmental influences effect on pharmacists' provision of antidepressant counseling. The first three items were adapted from Gardner, Murphy, Woodman, and Connelly (2001). The last item that asks pharmacists about prescriber support of their recommendations was a newly developed item. Pharmacists were asked to indicate their level of agreement/disagreement with statements about current factors that may affect their provision of antidepressant counseling including questions about: (a) patient, (b) public, and (c) pharmacy management expectations of pharmacists to provide antidepressant medication counseling, and (d) prescribers support of pharmacists recommendations. Responses were measured on a five-point *disagree/agree* Likert type scale.

Section IV - Pharmacists' antidepressant counseling behaviors (Questions 2a-2j). All items for section five consisting of question two of the questionnaire were developed from a list of standard interventions performed by pharmacists to improve depression care and outcomes for patients with depression as reported in Boudreau and colleagues (2002) and are described next.

In the questionnaire development stage, the response categories for these counseling behavior items were for patients counseled and included a corresponding percentage. These original response categories were: No patients – 0%; few patients – 10% or less; less patients – 25%; some patients – 50%; most patients – 75%; and every patient – 100%. Prior to the pretest implementation stage, however, the response categories for pharmacist counseling behaviors were revised and reflect the current response categories without the corresponding percentages. This modification of the antidepressant counseling response categories was considered

appropriate because it was determined that having respondent pharmacists reflect on (1) the subset of patients who had been newly prescribed antidepressants for 90 days or less, (2) within the 30 days prior to their completion of the study questionnaire, and (3) the percent of this subset of patients for whom they had provided antidepressant counseling for 14 different counseling behaviors would be very time consuming, burdensome, and could also create major recall difficulties for respondent pharmacists to provide accurate responses in a timely manner. Hence, the modification to the response categories for the antidepressant counseling questions was seen as justified.

Reassurance (Questions 2a-2j). A ten-item index was developed to measure pharmacists' antidepressant counseling behaviors during the previous 30 days prior to their completion of the questionnaire. Responses were measured using a 7-point response category – *none; few; some; about half; more than half; almost all; all*. Respondents were asked to indicate in the last 30 days how many patients with newly prescribed antidepressants - during the first 90 days of their treatment – they had engaged in the following counseling activities: (a) assessed patients' knowledge and understanding of depression, (b) assessed patients' understanding of the reason the doctor prescribed the antidepressant(s), (c) provided verbal information about the drug regimen and its purpose, (d) provided written information in addition to the patient medication guide/handout about the drug regimen and its purpose, (e) provided information about symptoms and/or causes of depression, (f) provided information about the time course of response to antidepressant medication, (g) discussed options for managing side effects, (h) addressed patient concerns or questions about drug efficacy and/or benefits, (i) asked patients about potential barriers to taking the antidepressant(s) as prescribed, and (j) encouraged adherence to the regimen.

Antidepressant monitoring (Questions 3b-3e). Items that examined antidepressant monitoring were developed from a survey that assessed perceived barriers to the provision of pharmaceutical care in rural community practice (Venkataraman, Madhavan, & Bone, 1997). Seventeen pharmaceutical care activities/behaviors were identified and categorized into four major service constructs: (1) drug related identification and problem solving, (2) patient communication, (3) drug therapy monitoring, and (4) obtaining and maintaining patient information. They measured the extent/frequency of service provision on a seven-point scale ranging from *least frequently* to *most frequently*.

A four-item index was developed to measure pharmacists' antidepressant monitoring for the previous 30 days prior to completing the questionnaire. The responses were measured using a 7-point response category – *none; few; some; about half; more than half; almost all; all*. Respondents were asked to indicate in the last 30 days how many patients with newly prescribed antidepressants - during the first 90 days of their treatment – they had engaged in the following monitoring activities: (a) monitored patients' responses to therapy, (b) monitored occurrence of side effects, (c) reminded patients about upcoming prescription refills, and (d) contacted patients regarding a late refill.

Section V: Pharmacist and pharmacy characteristics. Variables in this section were included in the questionnaire to determine if there was a need to control for their effects.

Pharmacy service orientation (Question 6). All items included in question six of the questionnaire were slightly modified from a validated scale, the Pharmacy Service Orientation (PSO), developed by Clark and Mount (2006) to measure organizational culture in pharmacy practice sites. Measuring organizational culture is an important assessment for determining if the organization (pharmacy) is ready for implementation of a new patient-centered program (Clark

and Mount, 2006). The PSO measure represents the mean of three semantic differential scale evaluations of a pharmacy by a pharmacist working at that particular pharmacy (Clark and Mount, 2006). These scale evaluations ask for an assessment of a practice site's orientation (patient or product), overall focus (quality or quantity), and an evaluation of what is involved in the pharmacist's work at each specific pharmacy (professional or technical) (Clark and Mount, 2006).

Responses in the original validated scale were measured using endpoint coding values for each of the three scales: for the orientation scale 1 = quantity and 10 = quality; for the focus scale 1 = product and 10 = patient; and for the pharmacist's work scale 1 = technical and 10 = professional. "The PSO semantic differential scale method utilizes bipolar adjective scales to allow for triangulation of affective responses to three dimensions of a single concept and is represented by the dimensions of evaluation (orientation), potency (focus), and activity (pharmacist's work)" (Clark and Mount, 2006).

Validity of the PSO instrument was based on the pharmacy's orientation toward the patient rather than the product, a focus on quality over quantity, and pharmacists' work that is more professional than technical in nature (Clark and Mount, 2006). The original scale was validated with 259 pharmacy school graduates (from the class of 1999), which provided information on 1192 individual pharmacy practice sites across the United States. Cronbach's alpha for the PSO instrument across all observations was 0.86.

The instructions for completing the PSO were not clear to some of the pharmacists who pretested the questionnaire for the current study; therefore, the instructions for completing the PSO in this questionnaire were enhanced from the original wording of "How would you describe

this site in terms of its: (*Place a check on each line*)" to read "In each of the following three groups, please describe your practice site in terms of its: (*Place an X on the line*)".

In an effort to keep the overall structure of the three items from the original scale, minor modifications were made to the items that comprise the PSO to enhance clarity of the information requested. The modifications were as follows: (1) the orientation dimension - the original label of this scale was changed from "Orientation" to "Practice Site Orientation" and the scale end-points were enhanced from "Patient" and "Product" to state "Patient-focused" and "Product-focused", respectively; (2) the focus dimension - the original label of this scale was changed from "Focus" to "Practice Site Focus" and the scale end-points were enhanced from "Quality" and "Quantity" to state "Quality of service" and "Quantity of service", respectively; and (3) the pharmacist's work dimension - the scale end-points were enhanced from "Professional" and "Technical" to state "Professional knowledge" and "Technical competence", respectively.

Antidepressant Counseling Provision Comparison (Question 7). This question was inserted into the questionnaire to gauge for any self-selection bias to complete the questionnaire. This question asks how often the responding pharmacist provides antidepressant counseling in comparison to other full time pharmacists at his/her practice site, since the procedure for participant selection only specifies that if there is more than one full time pharmacist at this pharmacy, a full time pharmacist at this practice site is eligible for study participation. Respondents were asked about the frequency of their provision of antidepressant counseling to patients at their pharmacy in comparison to other pharmacists at their practice site. Specifically, the question asked, when compared to other full time pharmacists at their practice site, how often does responding pharmacists provide antidepressant medication counseling to patients. The five

Table 1-1
Measures of Research Variables

Variables	Meaning	Data Source: Survey Question(s)	Operationalization
Independent Variables			
• CSM Illness Perceptions (Attitude) of Depression			
Consequences (CONSEQ)	Pharmacist perception of the emotional, psychological, and financial consequences of depression for patients	Q. 1a – 1g (7 items)	• Each item had a score, ranging from 1 for "strongly disagree" to 5 for "strongly agree" • Scale is the mean of 7 items
Control/Cure of Illness (CCILL)	Pharmacist perception of the overall control and/or curability of patients' depression	Q. 1h – 1l (5 items)	• Each item was scored, ranging from 1 for "strongly disagree" to 5 for "strongly agree" • Scale is the mean of 5 items
Control/Cure by HCP (CCHCP)	Pharmacist perception of pharmacist's role in the control and/or curability of patients' depression	Q. 1m – 1n (2 items)	• Each item had a score, ranging from 1 for "strongly disagree" to 5 for "strongly agree" • Scale is the mean of 2 items
Timeline [Chronic] (TIMECH)	Pharmacist perception of a long-term nature and duration of patients' depression	Q. 1o – 1p (2 items)	• Each item was scored, ranging from 1 for "strongly disagree" to 5 for "strongly agree" • Scale is the mean of 2 items
Timeline [Episodic] (TIMEEP)	Pharmacist perception of a short-term or sporadic nature and duration of patients' depression	Q. 1q – 1r (2 items)	• Each item had a score, ranging from 1 for "strongly disagree" to 5 for "strongly agree" • Scale is the mean of 2 items
• Perceived Behavioral Control			

Variables	Meaning	Data Source: Survey Question(s)	Operationalization
Self-Efficacy (SELFEF)	Pharmacist confidence in his/her current knowledge and skills and ability to communicate with patients with depression	Q. 4d – 4g (4 items)	• Each item had a score, ranging from 1 for "strongly disagree" to 5 for "strongly agree" • Scale is the mean of 4 items
• Organizational and Environmental Influences			
Organizational influences (ORGINF)	Influences within the organization that faciliate or restrict pharmacist engagement in antidepressant counseling	Q. 4a – 4c (3 items)	• Each item had a score, ranging from 1 for "strongly disagree" to 5 for "strongly agree" • Scale is the mean of 3 items
Environmental influences (ENVIRINF)	Influences within the environment that facilitate or restrict pharmacist engagement in antidepressant counseling	Q. 4h – 4k (4 items)	• Each item had a score, ranging from 1 for "strongly disagree" to 5 for "strongly agree" • Scale is the mean of 4 items
Dependent Variable(s)			
• Counseling Behaviors			
Reassurance (COUNREA)	The extent to which pharmacist engages in reassurance counseling behaviors	Q. 2a-2j (10 items)	• Each item was scored, ranging from 0 for "none" to 6 for "all" • Index is the sum of 10 items
Antidepressant Monitoring (MONBEH)	The extent to which pharmacist engages in antidepressant medication monitoring	Q. 3b-3e (4 items)	• Each item was scored, ranging from 0 for "none" to 6 for "all" • Index is the sum of 4 items

response categories were: *more often, about the same, less often, don't know, not applicable – only pharmacist at this pharmacy.*

Site provision of MTM services (Question 8a). Respondents were asked to indicate (*yes/no*) if their pharmacy provided any MTM services in 2010.

Type of MTM services provided (Question 8b). If respondents answered *yes* to question 8, part a, they were also asked to indicate the type of medication therapy management (MTM) services provided. Response options were: *Asthma, Diabetes, Depression, Hyperlipidemia, Hypertension, Other: please specify.* Respondents were asked to check all that apply.

Gender (Question 9). Respondents were asked to indicate their gender (*male* or *female*).

Education (Question 10). Respondents were asked to provide their educational background pertaining to pharmacy. Response categories were: *B.S. Pharmacy, PharmD, Residency, Masters, Other: Specify.* Respondents were asked to check all that apply.

Job title (Question 11). Respondents were asked to provide their job title. Response options were: *Staff pharmacist, Manager, Owner/partner, Other: Specify.*

Practice site (Question 12). Respondents were asked to provide their practice site classification. Response options were: S*ingle store independent pharmacy, Multi-store independent pharmacy, Chain pharmacy, Mass merchandiser, Grocery, Clinic, Other: Specify.*

Time as pharmacist (Question 13). Respondents were asked to indicate in years how long they have practiced as a pharmacist.

Time at pharmacy (Question 14). Respondents were asked to indicate in years how long they have practiced at this pharmacy.

Antidepressant and/or depression CE hours obtained in 2010 (Question 15a). Respondents were asked to indicate in hours how many CE hours related to depression and/or antidepressants they obtained in 2010.

Description of depression CE hours for 2010 (Question 15b). If respondents indicated they obtained continuing education (CE) hours related to depression and/or antidepressants in 2010 they were asked to describe in an open-ended question format the relevant CE they had obtained.

Number of staff pharmacists (Question 16). Respondents were asked to indicate in full time equivalence (40 hours a week) how many staff pharmacists are employed at their practice site.

Number of pharmacists providing antidepressant counseling (Question 17). Respondents were asked to indicate how many pharmacists at their practice site currently provide antidepressant medication counseling.

Daily prescription volume (Question 18). Respondents were asked to provide the average prescription volume - the average number of prescriptions filled per day - at their practice site.

Daily antidepressant prescription volume (Question 19). Respondents were asked to provide the average antidepressant prescription volume - the average number of antidepressant prescriptions filled per day - at their practice site.

Questionnaire Pretest

A complete draft of the questionnaire was administered to a convenience sample of 10 pharmacists who hold one or more of the following degrees, B.S. Pharmacy, PharmD, Masters, and/or Ph.D, in a pharmacy-related discipline. Six of the ten pharmacists were faculty members

of Auburn University Harrison School of Pharmacy and the remaining four were practicing pharmacists at community practice sites. After completion and submission of the pretest questionnaire, each pharmacist was subsequently interviewed in person, over the phone, or via email to determine if the questions were: easy to understand, applicable to a community pharmacy setting, and within the scope of a pharmacist's professional role. In addition, each individual was asked to report the amount of time it took to complete the questionnaire. In the majority of cases (7) it took between 10-15 minutes to complete the questionnaire; two pharmacists reported completing the questionnaire within 20 minutes due to distractions, and one pharmacist did not provide the amount of time it took to complete the questionnaire. Most of the items were clear and easy to understand as originally developed and tested.

The wording of instructions for four questions (Questions 2, 3, 5, 6) was changed due to some confusion in the original wording, and the response categories for one question (Question 5) was changed from: *not at all, a little, somewhat, very,* and *extremely* to a five-point *disagree/agree* likert type scale. One question was completely removed to shorten the length of time to complete the questionnaire and because it was determined to be unnecessary for the purpose of this study. Lastly, one question was added to the questionnaire to help determine if self-selection bias exists with the data collected. This question asks how often the respondent pharmacist provides antidepressant counseling in comparison to other full time pharmacists at his/her practice site since the methodology for participant selection only specifies that if there is more than one full time pharmacist at the pharmacy, a full time pharmacist at the practice site is eligible to participate in the study.

Stage II - Questionnaire Administration

Study Population and Sampling

Sample Selection

One state was chosen from which to select a convenience sample of community pharmacies due to a lack of resources, which dictated limitations in the cost and scope of study implementation. Conducting this study in only one state was deemed the most appropriate approach for the following reasons. First, a one-state approach was deemed advantageous since there is more control for external factors (e.g., counseling laws) that might have an impact on pharmacists' counseling behaviors. After a one-state setting was determined to be appropriate, the next step was to identify a state that would have an adequate number of currently depressed patients to ensure that pharmacists would have sufficient opportunities to engage in antidepressant counseling behaviors. Accordingly, conducting the study in a southeastern state was considered appropriate because research has shown that the southeastern states have the highest rates of currently depressed adults in the nation (CDC, 2010). Alabama was selected as the state to include in this study since it is of interest to the researcher's land grant institution and because it has the second highest rate of depressed adults in the southeastern U.S. with a current rate of depressed adults of 13.0% (CDC, 2010). Therefore, Alabama community pharmacies served as the population of interest for this study.

A random sampling procedure was used to identify the community pharmacies to be included in the study. A list of all community pharmacies in the state of Alabama for 2008/2009 was obtained from the Hayes Retail Pharmacy Directory. The contact information provided in the list of pharmacies was then entered into an Excel spreadsheet using the following entry method. First, each pharmacy's name and contact information was entered into the spreadsheet according to city name in alphabetical order, and then the pharmacies located in each city were listed alphabetically; these listings were in the exact order of the pharmacy name and contact

information provided in the Hayes Directory. This method of entry provided a corresponding number for each pharmacy that was congruent with its location in the Hayes Directory. For instance, the seventeenth pharmacy listed in the Hayes Directory of Alabama community pharmacies was also pharmacy #17 in the Excel spreadsheet.

After all 1145 Alabama community pharmacies were entered into the spreadsheet, the accuracy of the list was verified by confirming the status of as many chain pharmacies, grocery store pharmacies, mass merchandiser pharmacies, and some of the independent store pharmacies as possible through the pharmacies' websites online, pharmacy locator services on parent store company websites, and through calling the provided phone numbers of several stores to verify the store was still in operation. In addition to verifying the status of these pharmacies and their eligibility for possible study selection, other pharmacies were excluded from potential selection because they were either: (a) no longer in existence or (b) they were a hospital, clinic-based, or a medical supply only pharmacy and were therefore removed from the list for possible selection into the study. After confirming the accuracy of the list and the eligibility of the community pharmacies on the list, 61 pharmacies were removed for a final subject pool of 1084 pharmacies. From the eligible subject pool of 1084 pharmacies, a random sample of 600 community pharmacies was selected to receive a five-page questionnaire to be completed by a full time pharmacist at each selected pharmacy.

To randomly select the pharmacies for study inclusion, 600 random, unique and non-repetitive numbers between the numbers of 1 and 1084 were generated using a computer program designed as a random number generator (http://www.randomizer.org). These numbers were then used to select the corresponding community pharmacies from the list of 1084 community pharmacies for study inclusion.

Study Administration

This study utilized a modified Dillman (2007) method to administer the questionnaire. All data were collected using either an electronic survey instrument or a paper survey instrument; both instruments were identical in content, the only difference was the mode of delivery and collection of data. The data collection process included a maximum of three contact attempts made with potential participants; all contacts were made via U.S.P.S. first-class mail. Instructions for the selection of the appropriate individual at each pharmacy to complete the questionnaire were provided on the initial study notification postcard and in both of the complete survey packet mailings. Pharmacist participant selection instructions were as follows: "Including the pharmacy manager, if there are two or more full time pharmacists who regularly practice at this pharmacy, any one of the full time pharmacists can participate in this study."

First mail contact. A brief study notification (initial) postcard, which provided an introduction to the study and information for completing the questionnaire online (the internet address provided on the postcard took the participants to the questionnaire on Qualtrics if they chose this method), was sent to all 600 selected community pharmacies in Alabama. This initial postcard informed pharmacies of the forthcoming survey packet that would be sent within a few days of the initial postcard mailing. The study notification (initial) postcard also stated that the questionnaire was designed to be completed by a full time pharmacist at this practice site.

Second mail contact. The complete survey packet was mailed to all community pharmacies that had not chosen to respond to the questionnaire via Qualtrics at the time of the packet mailing. Therefore, since six respondents had completed the questionnaire via Qualtrics at the time of the preparations of the survey packet for mailing, the complete survey packet was mailed to 594 community pharmacies approximately four days after the initial postcard mailing.

The complete survey packet included a one-page study invitation/information cover letter, the five-page questionnaire in hard copy format with alternate information for completing the questionnaire online, and a pre-addressed stamped return envelope so that interested participants could complete the questionnaire in a preferable format at a time and place of their convenience.

Final mail contact. A follow-up contact thank you/reminder study packet was sent via U.S.P.S. first-class mail to non-responding pharmacies two weeks after the initial study packet was sent to thank pharmacists for their time and to remind pharmacists who had not yet done so, to please complete and return the questionnaire. The reminder mailing contained a second complete (follow-up) study packet with the one-page thank you/reminder information cover letter, the five-page questionnaire and alternate instructions for completing the questionnaire online (the internet address provided took the participants to the questionnaire on Qualtrics if they chose this method), and a pre-addressed stamped return envelope.

Electronic questionnaire. An electronic version of the questionnaire, which had the identical questions except that they were in an online format, was created and posted to the Harrison School of Pharmacy's Qualtrics website account. Participants who preferred to complete the questionnaire using the electronic version accessed the website using the internet address provided on the initial study postcard and/or on the front cover of the paper version of the questionnaire, which was sent in the first complete study packet and the follow-up/reminder study packet. After typing the provided internet address into an open web browser, the participant had immediate access to the online version of the IRB-approved online information letter, which provided information including the purpose of the study, the benefits and risks of participating in the study, and contact information for the principal investigator, her research advisors, and the Auburn University IRB.

After reading the electronic information letter, participants were instructed to click on the "I Agree" button and then click the >> (enter) button, if they agreed to be a participant in this research. After participants clicked on the >> button, a new screen would load and on this new screen, a question was presented that requested the entry of the study ID # that was provided on the initial study notification postcard and the paper version of the questionnaire included in the first complete study packet and/or in the follow-up/reminder study packet. After entering their pharmacy assigned study ID# and pressing the >> button, the first page of the electronic version of the questionnaire was loaded on the screen.

The electronic version of the questionnaire was also 5-pages in length, the same as the paper version. For each page of the electronic questionnaire, participants could choose to answer or not to answer any and/or all of the questions on each page. If participants clicked on the >> button and had not selected to answer all the questions on that particular page, a courtesy prompt screen would load over the current questionnaire page and inform participants that there were one or more unanswered questions on the page; this screen gave participants two options to proceed: (1) answer the questions – this option would close the courtesy prompt screen and provide access to the questionnaire page with the missing responses for the participant to complete, or (2) continue without answering – this option would close the courtesy prompt screen and load the next page of the questionnaire.

After participants finished the last page (page 5) of the questions, a screen loaded that asked participants to enter their contact information if they wished to be entered into the drawings for the $50 Visa gift cards (more about this in the next section under incentives). Participants had the option to provide or not provide their contact information on this screen. They were instructed to click on the >> button on the bottom of this page to submit their

responses to the questionnaire and their optional contact information, if they provided it in the space indicated. A final screen would then appear in their browser that thanked participants for their time and participation; this final screen was used to indicate the end of the online questionnaire as well as the end of participation in this study.

Potential participants (community pharmacies) were assigned a 4-digit code upon random selection for potential study participation; the code was provided on the initial postcard and the paper questionnaire to allow the recording of returned/submitted questionnaires and for contact with pharmacies that have not yet returned/submitted their questionnaires. For electronic submission of the questionnaires, participating pharmacists were prompted to enter the 4-digit code online at the end of the electronic version of the IRB-approved information letter and prior to the loading of the electronic version of the questionnaire for their completion.

Participation Incentives

Monetary incentives are often used by researchers to facilitate willingness of eligible individuals to participate in research projects (Bentley & Thacker, 2004); these incentives have been used as a mechanism to encourage potential participants involvement in research conducted by most academic disciplines and in political and media research. In a recent meta-analysis of surveys that were conducted on various topics, it was estimated that the use of monetary incentives for research participation doubled the response rates (Edwards et al., 2002).

Most researchers opt to use small monetary incentives to increase response rates. For example, five one-dollar bills are sent with each Nielsen television survey request as an incentive for selected households to participate in the research, which consists of recording the types and length of television shows watched by each member of the selected household during a one-week period into a viewer diary (Nielsen, n.d.). Coogan and Rosenberg (2004) also used a five-dollar

incentive to increase response rates to their telephone survey research conducted on colorectal cancer; they mailed out a five-dollar bill in each study invitation letter in an effort to increase response rates. In a study conducted by Parkes, Kreiger, James and Johnson (2000), study participants completed a twenty-page questionnaire pertaining to tobacco exposure, diet, physical activity, and use of various medications; a small monetary incentive of five dollars was provided to each study participant who completed and returned the twenty-page questionnaire.

Due to the limited financial resources available for the current study, a small monetary incentive provided to each potential participant (600 pharmacists) was not feasible. Instead, in an effort to increase response rates for the current study it was decided that the incentive offer would consist of three larger monetary incentives ($50 Visa gift cards) in a drawing of eligible respondents within specific timeframes. Accordingly, as an incentive for pharmacists to respond to the study, and to thank respondent pharmacists for their time, each pharmacist who completed and returned/submitted either the paper or electronic questionnaire was entered into a drawing for a chance to win either: (a) one of two $50 Visa gift cards if surveys were returned within two weeks of receiving the initial survey packet, or (b) a chance to win one $50 Visa Gift card if surveys were returned within one week of receiving the follow-up mailing.

Only respondents who returned/submitted the questionnaire, provided a form of contact (either a phone number or email address) at the end of the questionnaire, and returned it by the deadline was entered in the drawing. Contact information provided by respondents was only used for the drawing and was destroyed as soon as the drawings were held and the winners were notified. The drawings were held immediately after the entry deadlines had ended. Contact information provided by pharmacists was immediately separated from the questionnaire and

placed in a box that was used to randomly select the winners. Only one entry per pharmacy practice site was allowed.

Sample Size Determination

A power analysis was conducted to determine the appropriate sample size for the current study. When conducting a power analysis, it is important to consider the four factors that determine statistical power: sample size, alpha level, statistical test, and effect size. The alpha level that is established will influence the likelihood of obtaining statistical significance; alpha level is commonly set at 0.05 (Cohen, 1988). Accordingly, this study set alpha at 0.05. The type of statistical test that will be conducted is also a determinant of statistical power, since the examination of statistical significance is conducted within the framework of a specific type of statistical test (Cohen, 1988). This study utilized linear regression and backward and hierarchical multiple regression statistical tests.

Effect size is another determinant of statistical power; the larger the effect the more likely a researcher is to have statistical significance and greater statistical power (Cohen, 1988). Traditionally, effect size is estimated from previous research in the specific field of study and is used to complete power calculations for similar research. Because the current study is novel and the effect size cannot be estimated from previous research, it was set at a level considered adequate for the statistical analyses conducted (Cohen, 1988). According to Cohen (1988), effect sizes in the behavioral sciences for multiple regression analyses range from small (0.02) to medium (0.15) to large (0.35). It is standard to use the medium effect size of 0.15 if little or no research on the specific topic is available. Hence, the effect size for the current study was set at 0.15.

Statistical power level was set at a conventional level of 0.80 (Cohen, 1988). This study utilized eight predictor variables and two control variables in one model and eight predictor variables and one predictor variable in the second model; therefore, a power analysis for backward multiple regression was conducted. Using an effect size of 0.15, an alpha level of 0.05, power at 0.80, ten predictor variables (consisting of the eight independent variables and two control variables), a minimum sample size of 118 participants was needed. With effect size set at 0.15, an alpha level of 0.05, power at 0.80, two predictor variables in block one and eight predictor variables in block two, the minimum sample size required was 110 participants for hierarchical multiple regression analyses.

Response rates reported for recent self-administered pharmacy surveys generally range from 20-40% (Herbert et al., 2006; Scheerder et al., 2009). Accordingly, it was anticipated that the response rates for this study would fall somewhere in the low end of this range, so a response rate of 20% was anticipated. Using the backward multiple regression minimal sample size of 118 and assuming a 20% response rate, a sample of 600 community pharmacies was deemed sufficient to conduct meaningful statistical analyses.

Independent and Dependent Variables

The designation as independent or dependent variable depends on which analysis has occurred. To test hypothesis 1, relationship between pharmacists' illness perceptions of depression and pharmacists' antidepressant counseling behaviors, pharmacists' illness perceptions of depression are the independent variables. For hypothesis 2, relationship between pharmacists' self-efficacy and pharmacists' antidepressant counseling behaviors, pharmacists' self-efficacy is the independent variable.

To test hypothesis 3, organizational influences will have a relationship with pharmacists' antidepressant counseling behaviors, organizational influences is the independent variable. For hypothesis 4, environmental influences will have a relationship with pharmacists' antidepressant counseling behaviors, environmental influences is the independent variable. In each of these bivariate analyses, the dependent variable is reassurance in the first analysis; in the parallel analysis the dependent variable is antidepressant monitoring.

To test hypothesis 5, tests of the overall proposed study model, the relationship of all independent variables (illness perceptions, self-efficacy, organizational influences, and environmental influences) are analyzed with each dependent variable separately. Hence, one analysis was conducted with reassurance counseling behaviors and another analysis was conducted with antidepressant monitoring counseling behaviors.

Data Analysis

SPSS version 19.0 was used to conduct all statistical analyses. Descriptive statistics (i.e., means, standard deviations, maximum and minimum ranges) and frequency distributions were examined and presented. Bivariate and multivariate analyses were conducted to investigate the relationships between variables. Linear regression was used to test the acceptability of the proposed study model. All statistical tests were evaluated at a minimum alpha level of 0.05.

Reliability

As recommended by Heppner, Wampold, and Kivlighan (2008), all independent and dependent variables were measured using multiple items to improve reliability. Reliability in general is the consistency of a measure (Kazdin, 1998). More specifically, reliability is the quantified expression of the relationship of items to each other within a measure (Kazdin, 1998). Cronbach's alpha coefficient was used to determine the internal consistency of the scale.

Corrected item-to-total correlation for each item was calculated; items that failed to demonstrate a corrected item-to-total correlation of at least 0.35 or above were excluded from further analysis. Because the study instrument was administered only once, other measurements of reliability were not feasible.

Validity

Validity can be described as the extent to which the data collection instrument measures what it is supposed to measure (Nunnally & Bernstein, 1994; Ross & Shannon, 2008). Four types of validity were assessed in this study: face validity, content validity, construct validity, and discriminant validity. Face validity is evaluated and established by those who are being surveyed; if the questionnaire looks like is it measuring what it claims to measure, then it has established its face validity (Ross & Shannon, 2008). Face validity was established during the questionnaire pretest stage.

Content validity can be described as the match between the content of the items and the construct you are assessing (Ross & Shannon, 2008). During the questionnaire development stage, the dissertation committee members and the questionnaire pretesters, who are experts in community pharmacy practice, assessed the content of the items with the goal of increasing the content validity of the measures. Next, construct validity examines the extent to which variables actually represent the essence of a hypothetical construct (Heppner, Wampold, & Kivlighan, 2008). Construct validity of the instrument was determined by confirmatory factor analysis (CFA). Discriminant validity was assessed by analyzing differences observed in the correlation between the construct and other constructs using principal components analysis.

Nonresponse Bias Investigation

Nonresponse bias has the potential to negatively impact the validity of the findings of a

study; therefore, it is important to determine if nonresponse bias was present in responses obtained from study respondents. The ideal procedure to assess nonresponse bias is to contact a subsample of the nonrespondents; however, this is often a difficult task since the individuals did not respond to the request for study participation. Accordingly, when obtaining information from study nonrespondents is not feasible, alternate procedures for assessing nonresponse bias must be implemented (Blake & Madhavan, 2010). Since information could not be obtained from study nonrespondents, the procedure selected for assessing nonresponse bias for the current study was an extrapolation method also known as wave analysis (Armstrong & Overton, 1977).

According to the literature, in a wave analysis, late respondents are believed to be similar to nonrespondents (Armstrong & Overton, 1977; Locker, 2000; Skomo, Deselle, & Shah, 2008); therefore, characteristics (demographics, pharmacy characteristics, counseling behaviors) of the first 20% of respondent pharmacists (early) and the last 20% of respondent pharmacists (late) were compared to assess nonresponse bias (Mott, Pedersen, Doucette, Gaither, & Schommer, 2001; Skomo et al., 2008; Zhao, Stockwell, & MacDonald, 2009).

Since only one pharmacist in each pharmacy was asked to participate in this study, it is possible that the pharmacist who chose to participate was more interested in this particular topic and/or more likely to be involved in these (antidepressant counseling) practices (Hernán, Hernández-Diaz, & Robins, 2004; Eysenbach & Wyatt, 2002). Therefore, it was deemed necessary to determine the potential for selection bias. To complete the selection bias analysis, pharmacists were asked to provide their response to the question, "Compared to other full time pharmacists at your practice site, how often do you provide antidepressant counseling to patients" and response categories included: *more often, about the same, less often, don't know, not applicable – only pharmacist at this pharmacy.* Descriptive statistics are reported.

Descriptive Statistics

Descriptive statistics were calculated for all key variables. Categorical variables were presented in terms of proportions and counts while continuous variables were presented in terms of means and standard deviations.

Bivariate Analysis

Bivariate relationships were tested using correlations to identify significant associations between study variables. More specifically, bivariate relationships were tested between: (a) control and independent variables, (b) independent variables, and (c) independent and dependent variables.

Regression Analyses

Regression and multiple regression analyses were used to examine two models for relationships between study independent and dependent variables. The first model included all independent variables (illness perceptions, perceived control [self-efficacy], organizational influences, and environmental influences and the reassurance counseling behaviors dependent variable. The second model examined all independent variables and the antidepressant monitoring counseling behaviors dependent variable. Lastly, the reduced model in which all nonsignificant independent variables have been removed will be included.

Chapter 4. Results

In the previous chapter, the research method used for the analysis stage of this dissertation was presented and discussed. In this chapter, the data collection results including response rate, the analyses of the data and the final results of these analyses are reported. First, the study response rate is presented. Then, characteristics of respondent community pharmacists and their pharmacies are discussed. Next, the data collected regarding the level of pharmacist engagement in antidepressant counseling is described. Then, scales are analyzed for validity and reliability. Finally, the hypotheses of the study are evaluated using multiple regression and the results of these evaluations are presented.

Response Rate

As previously described in chapter 3, mixed methods were used to collect data from respondents. A 5-page paper questionnaire was mailed via U.S.P.S. first class mail to 600 randomly selected Alabama community pharmacies with instructions for pharmacist selection to complete the questionnaire. Responding community pharmacists chose to complete either a 5-page questionnaire in paper format via U.S.P.S. first class mail or a 5-page electronic questionnaire via Qualtrics online website. Of the 600 mail questionnaires sent, 22 were undeliverable as addressed and were returned to sender. Of the 578 questionnaires presumed to be deliverable, a total of 119 responses were returned, of which 118 were considered complete (≥80% of questions answered) and one was considered partially complete (50-70% of questions answered), yielding an overall response rate of 20.6%. The composition of the 119 responses

consisted of 23 (19.3%) electronic responses received via the Qualtrics online website and 96 paper format responses (80.7%).

Descriptive Results

Description of Respondent Pharmacists and Their Pharmacies

Characteristics of respondents and their pharmacies are displayed in Table 4-1. The majority of respondents were male (60.2%), who hold a B.S. in pharmacy degree (56.3%), hold a pharmacy manager position (49.1%), and had not obtained antidepressant and/or depression related CE hours in 2010 (55.5%). Approximately 65% of respondents had practiced as a pharmacist for more than 10 years; however, nearly half of respondents (43.5%) had worked at their current practice site for less than 5 years.

Among participating pharmacies, 37.6% were chain pharmacies. The second and third most represented pharmacy ownership respondents were single-store independently owned (27.5%) and multi-store independently owned (18.3%) pharmacies, respectively. The least represented ownership was mass merchandiser pharmacies (4.6%). In the past year, 43.6% of the respondent's pharmacies provided MTM services. Of the MTM services provided, the top three services reported were hypertension (23.7%), diabetes (22.5%), and hyperlipidemia (22.5%). Slightly more than one-tenth (12.1%) of respondent pharmacists reported that their pharmacy provided depression MTM services in 2010.

Pharmacist Engagement in Antidepressant Counseling

There were two types of counseling behaviors measured in this study, reassurance and antidepressant monitoring. For each type of counseling behavior, pharmacists were asked to indicate in the last 30 days prior to their completion of the questionnaire, how many patients with newly prescribed antidepressants – during the first 90 days of their treatment – they engaged in

Table 4-1
Characteristics of Respondent Pharmacists and Their Pharmacies[a]

Variable	*n*[b] (%)
Gender	
Male	68 (60.2)
Female	45 (39.8)
Education	
BS Pharmacy	68 (56.3)
PharmD	49 (37.8)
Residency	2 (1.7)
Masters	3 (2.5)
Other	2 (1.7)
Job title	
Staff pharmacist	28 (25.9)
Manager	53 (49.1)
Owner/partner	26 (24.1)
Other	1 (0.09)
Obtained CE hours related to antidepressants/depression in 2010	
No	61 (55.5)
Yes	49 (44.5)
Number of years practicing as a pharmacist	
0 – 5 years	26 (22.8)
6 – 10 years	14 (12.3)
11 – 20 years	17 (14.9)
21 – 30 years	28 (24.6)
31 years or more	29 (25.4)
Number of years at current practice site	
0 – 5 years	47 (43.5)
6 – 10 years	23 (21.3)
11 – 20 years	23 (21.3)
21 – 30 years	10 (9.3)
31 years or more	5 (4.6)

[a]*N* = 119.
[b]Totals may vary due to missing data.

Table 4-1 (continued)

Variable	n[b] (%)
Pharmacy ownership	
Single store independently owned	30 (27.5)
Multi-store independently owned	20 (18.3)
Chain	41 (37.6)
Grocery/supermarket	13 (11.9)
Mass merchandiser	5 (4.6)
Provided any MTM services in 2010	
No	66 (56.4)
Yes	51 (43.6)
Type of MTM services provided in 2010	
Asthma	24 (13.9)
Diabetes	39 (22.5)
Depression	21 (12.1)
Hyperlipidemia	39 (22.5)
Hypertension	41 (23.7)
Other	9 (5.3)

[b]Totals may vary due to missing data.

specific antidepressant counseling behaviors. Results of pharmacist's engagement in each type of antidepressant counseling behavior are discussed next.

Antidepressant Counseling - Reassurance

Table 4-2 summarizes pharmacist engagement in reassurance antidepressant counseling among respondent pharmacists. Approximately one-forth of respondent pharmacists (25.4%) reported providing none of their patients with newly prescribed antidepressants (during the first 90 days of their treatment) with information about the symptoms and/or causes of depression during the 30 days prior to their completion of the study questionnaire. Next, about one-third of respondent pharmacists reported they have assessed few patients' knowledge and understanding of depression (37.8%), assessed few patients' understanding of the reason the doctor prescribed the antidepressants (30.3%), discussed options for managing side effects with few patients (27.7%), and asked few patients about potential barriers to taking the antidepressant(s) as prescribed (31.1%) for patients with newly prescribed antidepressant medications. More than one-third of pharmacists (36.4%) reported that, during the past 30 days, they provided all patients with newly prescribed antidepressants written information in addition to the patient medication handout/guide about the drug regimen and its purpose.

In addition, this study examined the extent to which pharmacists engaged in reassurance behaviors by creating an index to represent the overall engagement in reassurance behaviors. This index is used later in the bivariate and multivariate analyses. The antidepressant counseling – reassurance index consists of the sum of ten unique counseling behaviors reported by pharmacists. The index ranges from "0" for "None" to "6" for "All", so the summed values range from "0" for no involvement in any of the reassurance antidepressant counseling behaviors to a maximum potential value of "60" if a pharmacist were to report that he/she engaged in all of the reassurance

Table 4-2
Pharmacist Engagement in Antidepressant Counseling - Reassurance[a,c]

The extent to which respondents engaged in counseling activities with patients with newly prescribed antidepressants during the first 90 days of their treatment.	None	Few	Some	About Half	More than Half	Almost All	All
	n[b] (%)	*n*[b] (%)	*n*[b] (%)	*n*[b] (%)	*n*[b] (%)	*n*[b] (%)	*n*[b] (%)
Assessed patients' knowledge and understanding of depression	27 (22.7)	**45 (37.8)**	29 (24.4)	8 (6.7)	6 (5.0)	4 (3.4)	0 (0)
Assessed patients' understanding of the reason the doctor prescribed the antidepressant(s)	18 (15.1)	**36 (30.3)**	31 (26.1)	14 (11.8)	13 (10.9)	7 (5.9)	0 (0)
Provided ***verbal*** information about the drug regimen and its purpose	2 (1.7)	16 (13.4)	**32 (26.9)**	20 (16.8)	22 (18.5)	21 (17.6)	6 (5.0)
Provided ***written*** information in addition to the patient medication handout/guide about the drug regimen and its purpose	23 (19.5)	15 (12.7)	10 (8.5)	3 (2.5)	10 (8.5)	14 (11.9)	**43 (36.4)**
Provided information about symptoms and/or causes of depression	**30 (25.4)**	27 (22.9)	28 (23.7)	8 (6.8)	6 (5.0)	12 (10.2)	7 (5.9)
Provided information about the time course of response to antidepressant medication	12 (10.1)	20 (16.8)	21 (17.6)	14 (11.8)	17 (14.3)	**23 (19.3)**	12 (10.1)
Discussed options for managing side effects	10 (8.4)	**33 (27.7)**	31 (26.1)	18 (15.1)	12 (10.1)	11 (9.2)	4 (3.4)
Addressed patient's concerns or questions about drug efficacy and/or benefits	6 (5.1)	20 (16.9)	**33 (28.0)**	14 (11.9)	16 (13.6)	16 (13.6)	13 (11.0)
Asked patients about potential barriers to taking the antidepressant(s) as prescribed	34 (28.6)	**37 (31.1)**	25 (21.0)	5 (4.2)	8 (6.7)	8 (6.7)	2 (1.7)
Encouraged adherence to the regimen	7 (5.9)	11 (9.2)	22 (18.5)	16 (13.4)	11 (9.2)	**38 (31.9)**	14 (11.8)

[a] $N = 119$.
[b] Totals may vary due to missing data.
[c] Highest % for each row is bold.

antidepressant counseling behaviors with all patients with newly prescribed antidepressants during the 30-day period prior to completion of the questionnaire. Hence, a higher value for reassurance counseling indicates higher/more engagement in the provision of antidepressant counseling. Descriptive statistics provided the mean (25.24), mode (24), and standard deviation (12.02) of the reassurance counseling index. The reassurance counseling index had a range of 54; the distribution had a slight positive skew and was near normal with only mild peakedness.

Antidepressant Counseling - Monitoring

Table 4-3 summarizes pharmacist engagement in antidepressant monitoring among respondent pharmacists. For the previous 30 days, all of the respondent pharmacists reported that they had not monitored any patients' responses to therapy or occurrence of side effects for any of their patients. More than half of respondent pharmacists (52.5%) indicated that during the previous 30 days they or someone on their behalf did not contact any patients with newly prescribed antidepressants regarding a late refill. Approximately one-third (31.4%) of respondent pharmacists reported that they or someone on their behalf (e.g., pharmacy technician) did not remind any patients with newly prescribed antidepressants (during the first 90 days of their treatment) about upcoming prescription refills.

The antidepressant monitoring index is the sum of four unique counseling behaviors reported by pharmacists. The index ranges from "0" for "None" to "6" for "All", so the summed values range from "0" for no involvement in any of the antidepressant monitoring behaviors to a maximum potential value of "24" if a pharmacist were to report that he/she engaged in all of the antidepressant monitoring behaviors with all patients with newly prescribed antidepressants during the 30-day period prior to completion of the questionnaire. Hence, a higher value for antidepressant monitoring indicates higher/more engagement in the provision of antidepressant

Table 4-3
Pharmacist Engagement in Antidepressant Counseling - Monitoring[a,c]

The extent to which you or someone on your behalf engaged in adherence monitoring activities with patients with newly prescribed antidepressants during the first 90 days of their treatment.	None	Few	Some	About Half	More than Half	Almost All	All
	n[b] (%)	*n*[b] (%)	*n*[b] (%)	*n*[b] (%)	*n*[b] (%)	*n*[b] (%)	*n*[b] (%)
Monitored patients' responses to therapy	33 (28.2)	29 (24.8)	**34 (29.1)**	13 (11.1)	3 (2.6)	5 (4.3)	0 (0)
Monitored occurrence of side effects	29 (24.6)	32 (27.1)	**38 (32.2)**	9 (7.6)	6 (5.1)	4 (3.4)	0 (0)
Reminded patients about upcoming prescription refills	**37 (31.4)**	22 (18.6)	26 (22.0)	6 (5.1)	7 (5.9)	13 (11.0)	7 (5.9)
Contacted patients regarding a late refill	**62 (52.5)**	22 (18.6)	16 (13.6)	2 (1.7)	5 (4.2)	8 (6.8)	3 (2.5)

[a]*N* = 119.
[b]Totals may vary due to missing data.
[c]Highest % for each row is bold.

counseling. Descriptive statistics provided the mean (6.08), mode (0), and standard deviation (5.04) of the antidepressant-monitoring index. The antidepressant-monitoring index had a range of 19; the distribution had a positive skew and mild peakedness.

Pharmacists' Intentions to Engage in Additional Antidepressant Counseling

Pharmacists were asked about their future plans to engage in antidepressant counseling in addition to the current counseling provided at their practice sites. Findings are summarized in Table 4-4. The majority of respondent pharmacists reported a neutral stance regarding their intentions to engage in antidepressant counseling. Specifically, nearly half (48.3%) reported that they neither agree nor disagree with the statement, "I plan to speak with pharmacy/store management about offering antidepressant counseling ***in addition to*** the current counseling provided to patients with newly prescribed antidepressants."

Two-fifths (40.7%) of respondent pharmacists reported that they neither agree nor disagree with the statement, "I intend to provide antidepressant counseling ***in addition to*** the current counseling provided to patients with depression." Also, two-fifths (40.7%) of respondent pharmacists reported that they neither agree nor disagree with the statement, "I will work to ensure that adequate reimbursement is established for the provision of antidepressant counseling at my pharmacy"; however, almost as many respondents (37.3%) reported that they agree with this statement. Interestingly, slightly less than half (42.4%) of respondent pharmacists reported that they agree with the statement, "I will actively work to ensure a role for pharmacists in the provision of antidepressant counseling to patients with depression."

Self-Selection Bias Assessment

There was only one pharmacist from each selected pharmacy who participated in this study. Since the study mailings were not addressed to a particular individual (e.g., pharmacy

Table 4-4
Pharmacists' Intentions to Engage in Additional Antidepressant Counseling[a]

Future plans to provide antidepressant counseling:	Strongly Disagree *n*[b] (%)	Disagree *n*[b] (%)	Neither Agree nor Disagree *n*[b] (%)	Agree *n*[b] (%)	Strongly Agree *n*[b] (%)
I plan to speak with pharmacy/store management about offering antidepressant counseling ***in addition to*** the current counseling provided to patients with newly prescribed antidepressants.	6 (5.1)	43 (36.4)	**57 (48.3)**	10 (8.5)	2 (1.7)
I will actively work to ensure a role for pharmacists in the provision of antidepressant counseling to patients with depression.	3 (2.5)	19 (16.1)	42 (35.6)	**50 (42.4)**	4 (3.4)
I intend to provide antidepressant counseling ***in addition to*** the current counseling provided to patients with depression.	4 (3.4)	19 (16.1)	**48 (40.7)**	44 (37.3)	3 (2.5)
I will work to ensure that adequate reimbursement is established for the provision of antidepressant counseling at my pharmacy.	5 (4.2)	21 (17.8)	**48 (40.7)**	37 (31.4)	7 (5.9)

[a]*N* = 118.
[b]Totals may vary due to missing data.

manager), it was important to determine if the individuals who chose to respond were different from other full time pharmacists at their practice site. Accordingly, it was important to assess the possibility for self-selection bias.

When asked in comparison to other full time pharmacists at their practice site how often does the respondent pharmacist provide antidepressant counseling to patients, almost half (49.2%) reported providing antidepressant counseling as often (about the same) as other full time site pharmacists. Nearly one-fourth (24.6%) did not know how their provision of antidepressant counseling to patients compared to other full time site pharmacists. Very few (2.5%) respondent pharmacists reported that they provide antidepressant counseling to patients less often than their full time site counterparts.

Nonresponse Bias Investigation

Ideally, to investigate nonresponse bias potential, a researcher should compare his/her sample to the population of interest; however, due to the unavailability of data for the population, this practice is not feasible for some research situations. The current study is one example of limited availability of population level statistics. In fact, the only population level data available for comparison with the sample is the characteristic of pharmacy ownership. Other data, such as information pertaining to individual pharmacists (characteristics and/or demographics), was not available for comparison.

When comparing the sample of 600 selected Alabama community pharmacies to the population of community pharmacies, which are the 1084 Alabama community pharmacies listed in the Haynes Drug Store directory, the distribution of pharmacy ownership was quite similar. More specifically, 340 independent pharmacies represented nearly half (41.6%) of the population ownership of Alabama community pharmacies whereas the sample was comprised of 239

independent pharmacies (39.8%). Chain pharmacy ownership represented 340 (31.4%) of the 1084 population of Alabama community pharmacies while the sample of Alabama community pharmacies was represented by 187 (31.2%) chain pharmacies. Mass merchandiser ownership represented 172 (15.9%) of the 1084 population of Alabama community pharmacies while 105 (17.5%) mass merchandisers represented the sample of Alabama community pharmacies. Lastly, 121 grocery owners represented 11.2% of the population while the sample contained 69 (11.5%) grocery owners.

To further evaluate the potential for nonresponse bias, several characteristics of the first 20 percent and last 20 percent of study respondents were compared. The first set of characteristics is related to respondents' demographics and their practice site while the second set is related to pharmacist's counseling behaviors. Findings are summarized in Table 4-5. When comparing respondents' demographics and their practice site' characteristics, only one variable was statistically significantly different. Early and later respondents differed regarding number of years pharmacists have been practicing at their practice site with a greater percentage of later respondents having worked at their practice sites for 5 years or less (60.9%) whereas the majority of early responders (63.6%) have been at their practice sites for 6 to 20 years ($\chi^2 = 10.69$; $df = 4$; $p < 0.05$).

Pharmacy ownership type did not statistically significantly differ among early and later respondents. The study also compared other pharmacist and pharmacy-related characteristics, including education, job title, completion of antidepressant and/or depression-related CE hours in 2010, and provision of MTM services in 2010. These differences were not statistically significantly different, however. When comparing counseling behaviors, Table 4-5 shows that earlier and later respondents mean differences were not statistically significantly different regarding engagement in antidepressant counseling reassurance (F (1,46) = 0.14, p = .712) or monitoring activities (F (1,45) = 1.72, p = .197).

Table 4-5
Characteristics of Early Respondents and Later Respondents

Variable	First 20% *n* (%)[a]	Last 20% *n* (%)[a]	Chi-Square (*df*)
Gender			2.68(1)
Male	16 (69.6)	10 (45.5)	
Female	7 (30.4)	12 (54.5)	
Pharmacy degree			3.86 (2)
B.S. Pharmacy	17 (70.8)	12 (50.0)	
PharmD	6 (25.0)	12 (50.0)	
Job position			0.13 (2)
Staff pharmacist	7 (31.8)	6 (27.3)	
Manager	9 (40.9)	10 (45.5)	
Owner/partner	6 (27.3)	6 (27.3)	
Obtained antidepressant/depression related CE hours in 2010			1.17 (1)
No	10 (45.5)	13 (61.9)	
Yes	12 (54.5)	8 (38.1)	
Number of years at the current practice site			10.69* (4)
0 – 5 years	4 (18.2)	14 (60.9)	
6 – 10 years	7 (31.8)	5 (21.7)	
11 – 20 years	7 (31.8)	4 (17.4)	
21 – 30 years	2 (9.1)	0 (0)	
31 years or more	2 (9.1)	0 (0)	
Number of years practicing as a pharmacist			2.67 (4)
0 – 5 years	3 (13.6)	7 (29.2)	
6 – 10 years	1 (4.5)	2 (8.3)	
11– 20 years	3 (13.6)	3 (12.5)	
21 – 30 years	8 (36.4)	8 (33.3)	
31 years or more	7 (31.8)	4 (16.7)	
Pharmacy ownership			6.11 (4)
Single store independent	9 (40.9)	3 (13.6)	
Multi-store independent	5 (22.7)	5 (22.7)	
Chain pharmacy	4 (18.2)	10 (45.5)	
Mass merchandiser	1 (4.5)	2 (9.1)	
Grocery	3 (13.6)	2 (9.1)	
Provided any MTM services in 2010			0.02 (1)
No	12 (52.2)	12 (50.0)	
Yes	11 (47.8)	12 (50.0)	
Continuous Variables			*F*-test
Engagement in reassurance counseling[b,d]	24.17 (11.04)	25.33 (10.70)	0.14
Engagement in antidepressant monitoring[c,d]	4.83 (4.74)	6.71 (5.09)	1.72

[a]Totals may vary due to missing data. * $p < 0.05$.
[b]Sum of index of 10 reassurance counseling behaviors. Index ranges from "0" for "None" to "6" for "All"; higher score indicates more pharmacist engagement in antidepressant counseling behaviors.
[c]Sum of index of 4 antidepressant monitoring activities. Index ranges from "0" for "None" to "6" for "All"; higher score indicates more pharmacist engagement in antidepressant monitoring activities.
[d]Means and standard deviations presented for F-test for continuous dependent variables.

Missing Data Handling

Prior to conducting the bivariate and multivariate analyses, missing data were handled. Missing data for dependent variables and respondents' characteristics could not be replaced. Missing data for the study independent variables were handled systematically. Missing values for scale items were replaced with the item mean. Missing data in the current study does not appear to present a problem since only a few cases had missing values. Specific details regarding missing data handling is provided in Appendix G.

Description of Multi-Item Measures and Their Components

Reliability and Validity

Prior to conducting bivariate and multivariate analyses, assessments of five multi-item scales for illness perceptions of patient depression, one multi-item scale for self-efficacy, one multi-item scale for organizational influences and one multi-item scale for environmental influences were conducted. Reliability analyses for all scales revealed acceptable reliability. All previously validated scales except for one, illness perceptions of patient depression-control/cure of illness, had a reliability coefficient equal to or greater than the original scale reliability. The control/cure of illness scale was the exception with a reliability coefficient of 0.68 for the original scale and a current reliability coefficient of 0.63. Results of the reliability assessment as well as means and standard deviations of scales are presented in detail in Appendix F.

Construct validity of the instrument was determined by factor analysis. Confirmatory factor analysis (CFA) was utilized for the five subscales of the illness perceptions of depression measures, and exploratory factor analysis (EFA) was utilized for the self-efficacy, organizational influences and environmental influences scales. Discriminant validity was also assessed using factor analysis (Principal Component Analysis) with varimax rotation to separate main

components that underlie each measure. Only components with eigenvalues greater than one were included in the analysis. For items included in the five measures of illness perceptions of patient depression, five components were extracted and generally corresponded to the five measures. For the other three multi-item scales (self-efficacy, organizational and environmental influences) three components were extracted and corresponded to the three measures. Items loading strongly onto multiple components and items forming a completely different construct were deleted from further analysis. Appendix F presents results of the validity analyses in detail.

Analytic Results

This section begins with the Table 4-6, which presents the correlation matrix for independent variables included in the multivariate analyses. Then, bivariate relationships between dependent variables and potential coefficients among independent variables were greater than 0.35. Even though several associations between the independent variables were statistically significant, all of them were weak associations. Accordingly, none of the independent variables were excluded from further analyses. More information regarding the examination of multicollinearity can be found in Appendix F.

Relationships Among Dependent Variables, Pharmacist's Demographics, and Site Characteristics

To determine which variables might have relationships with the dependent variables, the dependent variables, pharmacist's demographics, and their practice site characteristics were examined for the possibility of systematic variation. Specifically, bivariate relationships were examined among pharmacist's demographics (gender, education, job title, length of time practicing as a pharmacist, length of time at this practice site, and hours of CE related to

Table 4-6
Correlation Matrix for Variables Employed in Multivariate Models Predicting Pharmacist Engagement in Antidepressant Counseling[a]

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
(1) Consequences								
(2) Control/Cure of Illness	.04							
(3) Control/Cure by HCP	.13	.34**						
(4) Episodic Timeline	.19*	.06	.06					
(5) Chronic Timeline	.13	.02	-.19*	.06				
(6) Self Efficacy	.24**	.25**	.21*	.20*	-.04			
(7) Organizational Influences	.08	.19*	.14	-.11	.04	.35**		
(8) Environmental Influences	.10	-.05	.12	-.19*	.15	.14	.29**	

[a] $N = 119$.
[b] *$p < 0.05$, **$p < 0.01$.

antidepressants and/or depression in 2010), site characteristics (practice site ownership, number of staff pharmacists employed, number of pharmacists who currently provide antidepressant counseling, whether the site provided any MTM services in 2010, average prescription volume per day, and average antidepressant prescription volume per day), and the two dependent variables (reassurance counseling and antidepressant monitoring).

Reassurance counseling. Analyses for categorical variables (e.g., gender, education, job title, practice site ownership) and reassurance counseling were conducted using independent samples *t*-tests and one-way ANOVAs. Among these analyses, there were no statistically significant differences observed. For the analyses between antidepressant reassurance counseling and the continuous variables representing pharmacist's demographics and their site characteristics, regression models were used.

The results of the first regression analysis indicated a weak positive relationship exists between pharmacist's work orientation and pharmacists' engagement in reassurance antidepressant counseling, $r = .211$. In this regression analysis, 4% of the variance in reassurance antidepressant counseling can be explained by pharmacist's work orientation.

The results of the second regression analysis indicated that there is a moderate positive relationship between reassurance counseling (COUNREA) and pharmacist obtained CE hours related to antidepressants and/or depression in 2010 (ADCE), $r = .320$. In this regression analysis, 10% of the variance in reassurance antidepressant counseling can be explained by antidepressant and/or depression related CE hours obtained in 2010. No other regression models conducted to analyze antidepressant counseling – reassurance, pharmacist's demographics, and site characteristics revealed statistically significant relationships.

Antidepressant monitoring. Analyses for categorical variables (e.g., gender, education, job title, practice site ownership) and the dependent variable, antidepressant monitoring, were also conducted using independent samples *t*-tests and one-way ANOVAs. Results of these analyses revealed that the pharmacist's demographics and site characteristic variables did not have statistically significant relationships with antidepressant monitoring.

For the analyses between the dependent variable antidepressant monitoring and continuous variables representing pharmacist's demographics and their site characteristics, regression models were analyzed. Only one regression model indicated a statistically significant relationship between antidepressant monitoring and pharmacist's demographics. Specifically, the results of the regression analysis indicated that there is a moderate positive relationship between antidepressant monitoring (MONBEH) and antidepressant and/or depression related CE hours obtained in 2010 (ADCE), $r = .330$. In this regression analysis, 11% of the variance in antidepressant monitoring can be explained by antidepressant and/or depression related CE hours obtained in 2010. No other regression models conducted to analyze antidepressant monitoring, pharmacist's demographics, and site characteristics revealed statistically significant relationships.

Relationships Between Independent Variables and Control Variables

The relationships between the eight independent variables and the control variables, which were identified in the previous section, were analyzed. A correlation matrix for the eight independent variables and the two continuous control variables was examined. The strength of the associations observed were weak, with none exceeding $r = \pm 0.30$. The independent variable control/cure by health care provider (CCHCP) was associated with both potential control variables; however the correlations between CCHCP and the potential control variables were

weak, with neither exceeding 0.24. The strongest correlation was observed between self-efficacy and the pharmacist's work orientation; however, this association was only weak ($r = \pm 0.27$, $p < 0.01$). The independent variable organizational influences and the pharmacist's work orientation also had a weak correlation ($r = \pm 0.25$, $p < 0.01$).

Multivariate Analyses

The purpose for conducting the multivariate analyses was to better understand reasons why community pharmacists engage in antidepressant counseling. The results of these analyses are presented next.

Reassurance Counseling Analyses

For the first set of two parallel analyses, the dependent variable is reassurance antidepressant counseling. It is the sum of the index of counseling behaviors reported by pharmacists; the summed values range from "0" for no involvement in any reassurance antidepressant counseling behaviors to a maximum potential value of "60" if a pharmacist were to report that he/she engaged in all reassurance antidepressant counseling behaviors with all patients with newly prescribed antidepressants during the 30-day period prior to completion of the questionnaire. Hence, a higher value for reassurance counseling indicates higher/more engagement in the provision of antidepressant counseling.

To test the study hypotheses, five regression models were used, and the results of these models are presented in Table 4-7. In addition to the five regression models testing the study hypotheses, Table 4-7 also presents the Base model and the Reduced model. The first regression model in the table is the Base model consisting of the two control variables, which are pharmacist's work orientation and antidepressant and/or depression related CE hours obtained by respondent pharmacists in 2010 and the dependent variable, antidepressant counseling -

reassurance. For simplicity, the control variables will be referred to as pharmacist's work and antidepressant-related CE hours, hereafter.

The Base model was analyzed to determine the amount of variance the two control variables share with the dependent variable, reassurance antidepressant counseling. The Base model regression analysis reveals that the two control variables, pharmacist's work and antidepressant-related CE hours account for approximately 14% (r^2 = .144) of the variance in reassurance antidepressant counseling ($p < 0.01$).

Illness perceptions (H1). The second model, which is denoted as Model H1 in Table 4-7, utilized a hierarchical regression model to determine the relationship between pharmacists' illness perceptions of depression, using the five illness perception variables (consequences, control/cure of illness, control/cure by health care provider, chronic timeline, and episodic timeline) and pharmacists' reassurance antidepressant counseling behaviors while controlling for the effects of pharmacist's work and antidepressant-related CE hours. The two control variables were entered in the first step and the five illness perception independent variables were entered in the second step.

Variance Inflation Factor (VIF) is a commonly used measure of multicollinearity (Ross & Shannon, 2008; Merlter & Vannatta, 2005); it was examined for each regression model conducted to test the study hypotheses. Although there is no set cut off point to indicate acceptable or unacceptable levels of multicollinearity, VIF = 10 has been sited in the literature as a common cut off point (Ross & Shannon, 2008; Hair, Anderson, Tatham, & Black, 1998; Pedhazur, 1997); accordingly, this study used VIF = 10 as the cut off point to indicate an unacceptable level of multicollinearity. VIF for the independent variables in Model H1 ranged from 1.04-1.30, indicating that multicollinearity was not a concern.

Table 4-7
Linear Regression Models Explaining Pharmacist Engagement in Antidepressant Counseling - Reassurance[a,b]

	Base Model		Model H1		Model H2		Model H3		Model H4		Full Proposed Model		Reduced Study Model	
Study Variables	***β***	***p***	***β***	***p***	***β***	***p***	***β***	***p***	***β***	***p***	***β***	***p***	***β***	***p***
Pharmacist's work	**.218**	**.019**	.111	.229	.116	.198	.181	.057	**.202**	**.030**	.044	.633	-	-
Obtained related CE hours 2010	**.297**	**.002**	**.281**	**.002**	**.343**	**.000**	**.293**	**.002**	**.269**	**.005**	**.319**	**.000**	**.334**	**.000**
Illness Perceptions														
Consequences	-	-	**.282**	**.004**	-	-	-	-	-	-	**.208**	**.033**	**.216**	**.020**
Control/Cure of Illness	-	-	.180	.053	-	-	-	-	-	-	.141	.124	**.167**	**.050**
Control/Cure by HCP	-	-	.129	.193	-	-	-	-	-	-	.111	.249	-	-
Episodic Timeline	-	-	-.163	.086	-	-	-	-	-	-	**-.225**	**.023**	**-.218**	**.015**
Chronic Timeline	-	-	-.006	.951	-	-	-	-	-	-	.019	.835	-	-
Self-Efficacy	-	-	-	-	**.357**	**.000**	-	-	-	-	**.334**	**.002**	**.336**	**.000**
Organizational Influences	-	-	-	-	-	-	.145	.125	-	-	-.062	.526	-	-
Environmental Influences	-	-	-	-	-	-	-	-	.113	.239	.011	.911	-	-
Model R^2	.144		.269		.259		.164		.156		.345		.330	
Model R^2_{change}	-		.125		.115		.020		.012		.201		-	

[a] $N = 119$.
[b] $p < 0.05$, $p < 0.01$ are in bold.

The results of the analysis indicate that while controlling for the effects of pharmacist's work and antidepressant-related CE hours, the five illness perception variables account for approximately 13% (r^2_{change} = .125) of the variance in reassurance antidepressant counseling. This difference is statistically significant (F_{change} = 3.345, (5,98), p = 0.008). Stated another way, pharmacists' illness perceptions of depression explain 13% of the variance observed in antidepressant counseling independent of the effects of pharmacist's work and antidepressant-related CE hours. A review of the beta weights indicate the only variable that significantly contributed to the model, and was therefore a significant predictor of pharmacist's engagement in reassurance antidepressant counseling, was illness perceptions - consequences, β = .282, t (106)=2.95, $p < 0.01$. The regression results support Hypothesis H1; therefore, the null hypothesis is rejected. Illness perceptions of patient depression are important factors to pharmacist's engagement in antidepressant counseling.

Self-efficacy (H2). The third regression model tests Hypothesis H2; this hierarchical regression model was analyzed to determine the relationship between pharmacists' self-efficacy and pharmacists' reassurance antidepressant counseling behaviors while controlling for the effects of pharmacist's work and antidepressant-related CE hours. The two control variables were entered in the first step and the self-efficacy independent variable was entered in the second step. VIF for self-efficacy was 1.10, indicating that multicollinearity was not a problem.

The results of the analysis indicate that while controlling for the effects of pharmacist's work and antidepressant-related CE hours, self-efficacy accounts for approximately 12% (r^2_{change} = .115) of the variance in reassurance antidepressant counseling and this difference is statistically significant (F_{change} = 15.885, (1,102), $p < 0.001$). Hence, the null hypothesis H2 is rejected in

favor of its alternative. Self-efficacy is an important factor for pharmacists' engagement in antidepressant counseling.

Organizational influences (H3). Hypothesis H3 is tested in the fourth hierarchical regression model. The fourth model examined the relationship between organizational influences and pharmacists' reassurance antidepressant counseling behaviors while controlling for the effects of pharmacist's work and antidepressant-related CE hours. The two control variables were entered in the first step and the organizational influences independent variable (ORGINF) was entered in the second step. VIF for ORGINF was 1.07, indicating that multicollinearity was not a concern.

The results of the analysis indicate that while controlling for the effects of pharmacist's work and antidepressant-related CE hours, organizational influences account for approximately 2% (r^2_{change} = .020) of the variance in reassurance antidepressant counseling; however, this difference is not statistically significant (F_{change} = 2.388, (1,102), p = 0.125). Hence, the results do not support Hypothesis H3; accordingly, the null hypothesis is not rejected. Organizational influences are not important factors for pharmacists' engagement in antidepressant counseling.

Environmental influences (H4). To test Hypothesis H4, a fifth regression model was analyzed. This hierarchical regression model examined the relationship between environmental influences and pharmacist's engagement in reassurance antidepressant counseling while controlling for the effects of pharmacist's work and antidepressant-related CE hours. The two control variables were entered in the first step and the environmental influences independent variable (ENVIRINF) was entered in the second step. VIF for ENVIRINF was 1.09, indicating that multicollinearity was not a problem.

The results of the analysis indicate that while controlling for the effects of pharmacist's work and antidepressant-related CE hours, environmental influences account for approximately 1% (r^2_{change} = .012) of the variance in reassurance antidepressant counseling, and this difference is not statistically significant (F_{change} = 1.403, (1,102), p = 0.239). The results do not support Hypothesis H4; therefore, the null hypothesis is not rejected. Environmental influences are not important factors for pharmacists' engagement in antidepressant counseling.

Full proposed model. The final hypothesis, Hypothesis H5, which seeks to examine the relationship between pharmacists' illness perceptions, self-efficacy, organizational influences, and environmental influences and pharmacist's engagement in reassurance antidepressant counseling while controlling for the effects of pharmacist's work and antidepressant-related CE hours, was tested using a hierarchical regression model and is referred to as the Full Proposed Model.

The results are presented in Table 4-7. In this regression analysis, VIF for the independent variables ranged from 1.12-1.55, indicating that multicollinearity was not a problem. Regression results of the Full Proposed Model indicate an overall model that significantly predicts pharmacists reassurance antidepressant counseling behaviors above and beyond the effects of pharmacist's work and antidepressant-related CE hours, R^2 = .345, R^2_{change} = .201, F_{change} = 3.635, (8,95), p = 0.001. This regression model, while controlling for the effects of pharmacist's work and antidepressant- related CE hours, explained 20% of the variance in reassurance antidepressant counseling. Review of the beta weights indicate the only variables that significantly contributed to the model, and were therefore significant predictors of pharmacist's engagement in reassurance antidepressant counseling, were self-efficacy, β = .334, t

(106)=3.23, p <0.01, illness perception – episodic timeline, β = -.225, t (106)=-2.32, p = <0.05, and illness perception – consequences, β = .208, t (106)=2.17, p <0.05.

Reduced reassurance counseling model. Backward multiple regression was conducted to produce the Reduced study model. Analysis results of the Reduced study model are presented in Table 4-7. One control variable and four independent variables from the Full Proposed Model are retained in the Reduced model. Regression results indicate an overall model of five predictors, which includes the one control variable (antidepressant-related CE hours) and four independent variables (consequences, control/cure of illness, episodic timeline, and self-efficacy) that significantly predict pharmacists' engagement in reassurance antidepressant counseling, R^2 =.330, R^2_{adj} = .296, F (5,100)=9.831, p <0.000. This Reduced model accounted for 33% of the variance in reassurance antidepressant counseling as compared to 20% for the Full Proposed Model.

Antidepressant Monitoring Analyses

For the second set of two parallel analyses, the dependent variable is antidepressant counseling - monitoring. It is the sum of the index of monitoring behaviors reported by pharmacists; summed values range from "0" for no involvement in any antidepressant monitoring to a maximum potential value of "24" if a pharmacist were to report that he/she engaged in all antidepressant monitoring behaviors with all patients with newly prescribed antidepressants during the 30-day period prior to completion of the questionnaire. Therefore, a higher value for antidepressant monitoring indicates higher/more engagement in the provision of antidepressant counseling.

To test the study hypotheses, five regression models were used, and the results of these models are presented in Table 4-8. In addition to the five regression models testing the study

hypotheses, Table 4-8 also presents the Base model and the Reduced model. The first regression model is the Base model consisting of the one control variable, which is antidepressant and/or depression related CE hours obtained by respondent pharmacists in 2010 and the dependent variable, antidepressant monitoring. For simplicity, the control variable will be referred to as antidepressant-related CE hours, hereafter.

The Base model was analyzed to determine the amount of variance that the control variable shares with the dependent variable, antidepressant monitoring. The Base model regression analysis reveals that the control variable, antidepressant-related CE hours account for approximately 6% (r^2 = .062) of the variance in antidepressant monitoring ($p < 0.01$).

Illness perceptions (H1). The second model, which is denoted as Model H1 in Table 4-8, utilized a hierarchical regression model to determine the relationship between pharmacists' illness perceptions of depression, using the five illness perception variables (consequences, control/cure of illness, control/cure by health care provider, chronic timeline, and episodic timeline) and pharmacists' antidepressant monitoring behaviors while controlling for the effect of antidepressant-related CE hours. The control variable was entered in the first step and the five illness perception independent variables were entered in the second step.

VIF for the independent variables in Model H1 ranged from 1.00-1.01, indicating that multicollinearity was not a problem. The results of the analysis indicate that while controlling for the effect of antidepressant-related CE hours, the five illness perception variables account for approximately 4% (r^2_{change} = .044) of the variance in antidepressant monitoring; however, this difference is not statistically significant (F_{change} = 1.004, (5,102), p = 0.42). Results do not support Hypothesis H1; therefore, the null hypothesis is not rejected. Illness perceptions of patient depression are not important factors to pharmacist's engagement in antidepressant

Table 4-8
Linear Regression Models Explaining Pharmacist Engagement in Antidepressant Monitoring[a,b]

	Base Model		Model H1		Model H2		Model H3		Model H4		Full Proposed Model		Reduced Study Model	
Study Variables	***β***	***p***	***β***	***p***	***β***	***p***	***β***	***p***	***β***	***p***	***β***	***p***	***β***	***p***
Obtained related CE hours in 2010	**.249**	**.009**	**.223**	**.021**	**.266**	**.005**	**.247**	**.010**	**.203**	**.035**	**.209**	**.036**	**.206**	**.036**
Illness Perceptions														
Consequences	-	-	.104	.292	-	-	-	-	-	-	.053	.605	-	-
Control/Cure of Illness	-	-	-.053	.591	-	-	-	-	-	-	-.052	.614	-	-
Control/Cure by HCP	-	-	.154	.136	-	-	-	-	-	-	.122	.246	-	-
Episodic Timeline	-	-	-.004	.971	-	-	-	-	-	-	.009	.930	-	-
Chronic Timeline	-	-	.120	.231	-	-	-	-	-	-	.110	.279	-	-
Self-Efficacy	-	-	-	-	.154	.104	-	-	-	-	.127	.265	-	-
Organizational Influences	-	-	-	-	-	-	.040	.672	-	-	-.067	.536	-	-
Environmental Influences	-	-	-	-	-	-	-	-	.187	.052	.148	.168	-	-
Model R^2	.062		.106		.085		.064		.095		.137		.098	
Model R^2_{change}	-		.044		.023		.002		.033		.075		-	

[a] $N = 118$.
[b] $p < 0.05$, $p < 0.01$ are in bold.

counseling - monitoring behaviors.

Self-efficacy (H2). The third regression model tests Hypothesis H2; this hierarchical regression model was analyzed to determine the relationship between pharmacists' self-efficacy and pharmacists' antidepressant monitoring behaviors while controlling for the effect of antidepressant-related CE hours. The control variable was entered in the first step and the self-efficacy independent variable was entered in the second step. VIF for self-efficacy was 1.01, indicating that multicollinearity was not a concern.

The results of the analysis indicate that while controlling for the effect of antidepressant-related CE hours, self-efficacy accounts for approximately 2% (r^2_{change} = .023) of the variance in antidepressant monitoring and this difference is statistically not significant (F_{change} = 2.696, (1,106), p = 0.104). Hence, the results do not support Hypothesis H2; therefore, the null hypothesis is not rejected. Self-efficacy is not an important factor to pharmacist's engagement in antidepressant counseling - monitoring behaviors.

Organizational influences (H3). Hypothesis H3 is tested in the fourth hierarchical regression model. This model examined the relationship between organizational influences and pharmacists' antidepressant monitoring behaviors while controlling for the effect of antidepressant-related CE hours. The control variable was entered in the first step and the organizational influences independent variable (ORGINF) was entered in the second step. VIF for ORGINF was 1.00, indicating that multicollinearity was not a concern.

The results of the analysis indicate that while controlling for the effect of antidepressant-related CE hours, organizational influences account for less than half a percent (r^2_{change} = .002) of the variance in antidepressant monitoring, and this difference is not statistically significant (F_{change} = 0.181, (1,106), p = 0.672). Hence, the results do not support Hypothesis H3;

accordingly, the null hypothesis is not rejected. Organizational influences are not important factors to pharmacist's engagement in antidepressant counseling - monitoring behaviors.

Environmental influences (H4). To test Hypothesis H4, a fifth regression model was analyzed. This hierarchical regression model examined the relationship between environmental influences and pharmacist's engagement in antidepressant monitoring while controlling for the effect of antidepressant-related CE hours. The control variable was entered in the first step and the environmental influences independent variable (ENVIRINF) was entered in the second step. VIF for ENVIRINF was 1.06, indicating that multicollinearity was not a concern.

The results of the analysis indicate that while controlling for the effect of antidepressant-related CE hours, environmental influences account for approximately 3% ($r^2_{change} = .033$) of the variance in antidepressant monitoring, and this difference is not statistically significant ($F_{change} = 3.857$, (1,106), $p = 0.052$). The results do not support Hypothesis H4; therefore, the null hypothesis is not rejected. Environmental influences are not important factors to pharmacist's engagement in antidepressant counseling - monitoring behaviors.

Full proposed model. The final hypothesis, Hypothesis H5, which seeks to examine the relationship between pharmacists' illness perceptions, self-efficacy, organizational influences, and environmental influences and pharmacist's engagement in antidepressant monitoring while controlling for the effect of antidepressant-related CE hours, was tested using a hierarchical regression model and is referred to as the Full Proposed Model. The results are presented in Table 4-8. In this regression analysis, VIF for the independent variables ranged from 1.17-1.46, indicating that multicollinearity was not a concern.

Regression results of the Full Proposed Model indicate an overall model that does not significantly predict pharmacists antidepressant monitoring behaviors above and beyond the

effect of antidepressant-related CE hours, $R^2 = .137$, $R^2_{change} = .075$, $F_{change} = 1.082$, (8,99), $p = 0.382$. This regression model, while controlling for the effect of antidepressant-related CE hours, explained 8% of the variance in antidepressant monitoring; however, the results were not statistically significant. Review of the beta weights indicated no independent variables significantly contributed to the model; therefore none of the independent variables were significant predictors of pharmacist's engagement in antidepressant monitoring in the Full Proposed Model. Hence, Hypothesis H5 is not supported for antidepressant counseling - monitoring; therefore, the null hypothesis is not rejected.

Reduced antidepressant monitoring model. Backward multiple regression was conducted to produce the Reduced study model. Analysis results of the Reduced study model are presented in Table 4-8. The one control variable from the Full Proposed Model was retained in the Reduced model. Regression results indicate an overall model consisting of the control variable, antidepressant-related CE hours, that significantly predicts pharmacists' engagement in antidepressant monitoring, $R^2 = .098$, $R^2_{adj} = .081$, F (2,103)=5.624, p <0.01. This reduced model accounted for 10% of the variance in antidepressant monitoring as compared to 8% for the Full Proposed Model.

Chapter 5. Discussion and Conclusions

Study Overview

Depression is a relatively common and serious mental health disorder (Bleakley, 2009), which is expected to become the second leading disease burden worldwide in the next decade (Murray & Lopez, 1997). Despite the already high and increasing prevalence of depression, not all individuals who suffer with depression receive proper treatment in the primary care setting (Kates & Mach, 2007; Young et al., 2001).

Antidepressant medications are an effective and accessible treatment mechanism for alleviating depressive symptoms (Bleakley, 2009); in fact, antidepressants are among the top most prevalently prescribed medications in the U.S. (Parks, 2009). Despite the availability of effective antidepressant medications, there is a high rate of antidepressant nonadherence. Patients prematurely discontinue antidepressant medications for a variety of reasons including costly prescriptions, adverse side effects, and lack of positive effect, among others (Capoccia et al., 2004). Moreover, patients may not be cognizant of the importance of daily adherence to their antidepressant medication regimens and its impact on depression, and may therefore be inconsistent with their adherence.

Because problems exist when treating depression solely in primary care settings and these problems can be exacerbated by patient factors, pharmacists are in an excellent position to help address these problems through the provision of antidepressant counseling. However, many

pharmacists do not engage in antidepressant counseling and very little has been done to investigate why this is so.

Therefore, the primary purpose of this study was to identify and examine factors that are important to pharmacists' provision of antidepressant counseling. This study utilized aspects of the Theory of Planned Behavior (TPB) and the Common Sense Model (CSM) integrated into a proposed study model to explain reasons why pharmacists engage in antidepressant counseling provision to patients prescribed antidepressants for the treatment of depression. Specifically, this study assessed the relationships between pharmacist self-efficacy, organizational influences, and environmental influences with pharmacist's antidepressant counseling behaviors. In addition, this study examined the relationship between pharmacists' perceptions of patient depression, which represent three of five CSM illness representation dimensions, and pharmacist's engagement in antidepressant counseling.

Two types of antidepressant counseling activities were investigated, namely reassurance and monitoring. Reassurance counseling behaviors examined in this study included the provision of pharmacist evaluation of patient illness and medication knowledge and ensuring adherence. Antidepressant monitoring behaviors examined in this study included the monitoring of drug efficacy and side effects.

Five research questions were used to address the purpose of this study. For each hypothesis listed below, two parallel analyses were conducted for each type of counseling behaviors, namely reassurance and antidepressant monitoring. The research questions are as follows:

RQ1. What is the relationship between pharmacists' illness perceptions (attitude) of depression and pharmacists' antidepressant counseling behaviors?

RQ2. What is the relationship between self-efficacy and pharmacists' antidepressant counseling behaviors?

RQ3. What is the relationship between organizational influences and pharmacists' antidepressant counseling behaviors ?

RQ4. What is the relationship between environmental influences and pharmacists' antidepressant counseling behaviors ?

RQ5. What impact does pharmacists' illness perceptions of depression, self-efficacy, and organizational and environmental influences have on pharmacists' antidepressant counseling behaviors?

This chapter will discuss the study's findings, limitations, and the implications of the findings as well as provide recommendations for future research.

Overview of Findings for Reassurance Counseling

Research Question 1

As hypothesized, the results suggest that pharmacists' illness perceptions of patient depression have a positive and statistically significant relationship with antidepressant counseling – reassurance behaviors. Pharmacists' illness perceptions of patient depression explained 13% of the variance observed in antidepressant counseling while controlling for the effects of pharmacist's work and antidepressant-related CE hours ($F_{change} = 3.345$, (5,98), $p = 0.008$). However, a closer examination of which variables significantly contributed to the model revealed that only one of the five illness perception variables made a significant contribution, and was therefore a significant predictor of pharmacist's engagement in reassurance antidepressant counseling. This variable is (illness perceptions) - consequences. That is, greater perceived negative (or more severe) consequences of depression on patient's condition increased

the likelihood of pharmacist's engagement in antidepressant counseling. The other four illness perception variables were not significant predictors of pharmacist's engagement in reassurance antidepressant counseling.

Research Question 2

Self-efficacy had a positive and statistically significant relationship with antidepressant counseling. More specifically, self-efficacy was found to be a statistically significant predictor of pharmacist engagement in antidepressant counseling – reassurance. The results of the hierarchical regression analysis suggests that while controlling for the effects of pharmacist's work and antidepressant-related CE hours, self-efficacy explained 12% of the variance in reassurance antidepressant counseling and this difference was statistically significant (F_{change} = 15.885, (1,102), $p < 0.001$). Greater perceived self-efficacy of pharmacists increased the probability of community pharmacists' engagement in antidepressant counseling – reassurance behaviors.

Research Question 3

Results of the hierarchical regression model for hypothesis H3 revealed that organizational influences did not have a statistically significant relationship with antidepressant reassurance counseling. This model was only able to account for a relatively small amount of the variance observed in antidepressant counseling (2%), and the results were not statistically significant.

Research Question 4

The hierarchical regression results for hypothesis H4 revealed that environmental influences did not have a statistically significant relationship with antidepressant reassurance counseling. Specifically, the model for reassurance counseling only explained a small amount of

the variance in pharmacist's antidepressant counseling behaviors (1.2%) and these results were not statistically significant. Hence, environmental influences are not important factors to respondent pharmacist's engagement in antidepressant counseling.

Research Question 5

As predicted, results from the hierarchical regression of the Full Proposed Model suggest that illness perceptions, self-efficacy, organizational influences, and environmental influences significantly predict pharmacists reassurance antidepressant counseling behaviors above and beyond the effects of pharmacist's work and antidepressant-related CE hours (R^2 = .345, R^2_{change} = .201, F_{change} = 3.635, (8,95), p = 0.001). The Full Proposed Model explained 20% of the variance in reassurance antidepressant counseling. Only three of the eight variables significantly contributed to the model, while controlling for the effects of pharmacist's work and antidepressant-related CE hours. These variables, self-efficacy, illness perception – episodic timeline, and illness perception – consequences, are significant predictors of pharmacist's engagement in reassurance antidepressant counseling.

Reduced Reassurance Counseling Model

Backward multiple regression analysis produced the reduced model. The Reduced Study Model predicting engagement in antidepressant counseling - reassurance, retained one control variable and four independent variables from the Full Proposed Model. The control variable, antidepressant-related CE hours, statistically significantly increased the probability of pharmacist's engagement in antidepressant counseling – reassurance behaviors. Four of the independent variables, consequences, control/cure of illness, episodic timeline, and self-efficacy, were found to have a relationship with and be important predictors of pharmacists' engagement in antidepressant counseling – reassurance. More specifically, pharmacists' engagement in

antidepressant counseling increases 5.91, 3.50, and 7.02 units and decreases 6.73 units per one unit increase in consequences, control/cure of illness, self-efficacy, and episodic timeline, respectively.

Overview of Findings for Antidepressant Monitoring

Research Question 1

For this parallel analysis, which tested hypothesis H1 for antidepressant counseling – monitoring, the model was only able to account for 4% of the variance observed in antidepressant counseling – monitoring; however, the results were not statistically significant. Therefore, none of the illness perception variables were significant predictors of pharmacist's engagement in antidepressant counseling – monitoring behaviors.

Research Question 2

For regression model testing hypothesis H2, self-efficacy was not a significant predictor of antidepressant counseling – monitoring behaviors. The model only accounted for 2% of the variance observed in antidepressant counseling – monitoring behaviors, and was not statistically significant.

Research Question 3

Results of this hierarchical regression model for hypothesis H3 revealed that organizational influences did not have a statistically significant relationship with antidepressant counseling - monitoring. This regression model was only able to explain an extremely small amount of the variance observed in antidepressant counseling, which was less than 0.5%, and the results were not statistically significant.

Research Question 4

The hierarchical regression results for this parallel analysis for hypothesis H4 revealed that environmental influences did not have a statistically significant relationship with antidepressant monitoring behaviors. Specifically, the model for antidepressant monitoring only explained a small amount of the variance (3.3%) in pharmacist's antidepressant counseling behaviors and these results were not statistically significant. Hence, environmental influences are not important factors to pharmacist's engagement in antidepressant counseling.

Interestingly, although environmental influences were not significant predictors of antidepressant counseling in either model, the model that analyzed monitoring behaviors explained more of the variance in antidepressant counseling (3.3%) than the model that analyzed reassurance behaviors (1.2%). This may be explained by integrating the findings for hypotheses H3 and H4, which together these findings suggest that different factors may impact pharmacist's decisions to engage in the two types of counseling behaviors. Specifically, these findings suggest that while other, internal organizational factors may play an important role in pharmacists' decisions to engage in antidepressant counseling – reassurance behaviors, other external environmental factors may play an important role in pharmacists' decisions to engage in antidepressant counseling – monitoring behaviors.

Research Question 5

The results for this parallel analysis of the Full Proposed Model suggest that this model does not significantly predict pharmacist's antidepressant monitoring behaviors above and beyond the effect of antidepressant-related CE hours (R^2 = .137, R^2_{change} = .075, F_{change} = 1.082, (8,99), p = 0.382). The regression model explained only 8% of the variance in antidepressant monitoring; however, the results were not statistically significant. None of the independent

variables significantly contributed to this model; therefore none were significant predictors of pharmacist's engagement in antidepressant monitoring in the Full Proposed Model.

Reduced Antidepressant Monitoring Model

A backward multiple regression analysis produced the reduced model for antidepressant monitoring. The Reduced Study Model predicting engagement in antidepressant counseling – monitoring behaviors, retained the one control variable from the Full Proposed Model. The control variable, antidepressant-related CE hours, statistically significantly increased the probability of pharmacist's engagement in antidepressant counseling – monitoring behaviors.

Limitations

This study was subject to several limitations. The following section describes these study limitations in regard to study design and data collection methods and the generalizability of findings.

Study Design and Data Collection Method Issues

The first limitation of the research design is that it was a cross-sectional descriptive study. A 5-page questionnaire was used to collect data on full time community pharmacists' perceptions of patient depression, self-efficacy, organizational influences, and environmental influences, and their engagement in antidepressant counseling. Because a cross-sectional design was utilized for this study, any conclusions about cause and effect relationships between the study independent variables and engagement in antidepressant counseling cannot be inferred. This study was the first known study to examine the applicability of aspects of the Theory of Planned Behavior (TPB) and the Common Sense Model (CSM) of Illness Representations together in an integrated model to identify and explain factors that affect pharmacist's provision of antidepressant counseling to patients prescribed antidepressants. This study identified factors

that impact pharmacists' current roles in antidepressant counseling. However, causality has not been established.

A second limitation of the study was the low response rate. Although significant efforts were taken to achieve a high response rate, including the use of a modified Dillman method and a monetary participation incentive, only 119 pharmacists out of a potential 600 returned their completed questionnaires. This resulted in a final response rate of only 20.6%. A low response rate can decrease the power of the statistical tests conducted with the data collected, which leads to an inability to detect small differences. Some of the study variables indicated shared variance with antidepressant counseling but these relationships were not significant. With a higher response rate, these results may have been different. The presence of statistical significance for some study variables suggests a strong relationship; however, the low response rate needs to be considered when interpreting the absence of statistical significance for other study variables.

Another limitation, which may have contributed to the low response rate, is the ability to self-select participation into the study. Self-selection for study participation can also increase the potential for self-selection bias. The study questionnaire was not addressed to any specific individual within the pharmacy, and there was only one pharmacist from each selected pharmacy who participated in this study. Therefore, it was deemed necessary to assess the potential for self-selection bias.

To assess the potential for self-selection bias, one question was inserted into the questionnaire, which asked respondent pharmacists to compare with other full time pharmacists at their practice sites how often they provide antidepressant counseling to patients. Nearly half of respondent pharmacists (49.2%) reported that they provide antidepressant counseling as often (about the same) as other full time site pharmacists. Furthermore, approximately one-fourth

(24.6%) of respondent pharmacists did not know how their provision of antidepressant counseling to patients compared to other full time site pharmacists. Information gleaned from pharmacist's responses to the self-selection question indicates that approximately three-fourths (73.8%) of respondent pharmacists did not appear to have participated in this study due to a higher level of engagement in antidepressant counseling behaviors.

The next limitation concerns the potential for the data to reflect socially desirable responses. Pharmacists were informed of the purposes of the study, which was to identify factors important to pharmacist's engagement in antidepressant counseling. Since the focus of the current study was on pharmacist's perspectives of depression and engagement in antidepressant counseling, and because the principal investigator is a National Certified Counselor (NCC), which was indicated on the study information letters and initial study notification postcard, it is reasonable to believe that respondent pharmacists may have thought the researcher wanted them to indicate more positive perceptions of patient depression and/or greater involvement in antidepressant counseling behaviors. This belief could have potentially caused respondent pharmacists to respond to the questionnaires in a manner that did not accurately reflect their perceptions of depression and/or their level of engagement in antidepressant counseling behaviors.

Also, the current study utilized a self-report survey to measure pharmacists' antidepressant counseling behaviors, which provided only an estimate of their actual counseling behaviors and relied on pharmacist recall for the 30-day period prior to their completion of the study questionnaire, which may further contribute to the potential for the data to reflect socially desirable responses. Hence, their survey responses could reflect the tendency of these respondent pharmacists to overestimate their actual antidepressant counseling behaviors. Furthermore, if

Alabama state regulations for pharmacist counseling are considered stringent, respondent pharmacists may have overestimated the prevalence and extent of their engagement in antidepressant counseling behaviors (Svarstad et al., 2004). No measures were used to assess the potential existence of the social desirability bias limitation with the current study.

To assess the potential for social desirability bias, the Marlowe-Crowne Social Desirability Scale (MCSDS) short form is a measure that can be used (Barger, 2002). The MCSDS is used to indicate the extent to which individuals provide distorted reports about their behaviors and/or symptoms that reflect a more socially desirable behavior (Nederhof, 1985); hence, the MCSDS can be used as an index in analysis with self-report variables, to gauge the extent of social desirability bias present in the data collected.

One of the ten items in the reassurance counseling index which was used to measure pharmacist's engagement in antidepressant reassurance counseling behaviors was flawed and, therefore, could have been misinterpreted by responding pharmacists. More specifically, the item that asked pharmacists about the extent to which they had "Provided ***written*** information in addition to the patient medication guide/handout about the drug regimen and its purpose" may have been interpreted by respondent pharmacists as asking them if they provided written information required by the FDA, which is the medication guide and the drug monograph. This was not the purpose of the item; the purpose of the item was to ascertain if respondent pharmacists were providing patients with written information about their antidepressant medication(s) and the purpose of the medication in addition to the required FDA written information. Unfortunately, the exact purpose of this question was not made clear for all respondent pharmacists and this may have biased the results of the data collected for this item.

Lastly, this study identified and examined the effects of only particular factors that are important to pharmacists' provision of antidepressant counseling. Hence, the study was not designed to evaluate all factors that may influence pharmacists' provision of antidepressant counseling. There are other factors (e.g., financial motivations or lack thereof) that might explain pharmacists' provision of antidepressant counseling; and these factors require separate study.

Generalizability of Findings

Nonresponse bias was an important concern since the response rate was less than 100%. Nonresponse bias can be the result of a high number of potential study participants who are interested in the study subject and therefore respond to the study; whereas potential participants who have little or no interest in the study subject do not respond, hence creating a bias in the data collected, and subsequently, in the results obtained. Since information could not be obtained from study nonrespondents, the procedure utilized for assessing nonresponse bias was an extrapolation method also known as wave analysis (Armstrong & Overton, 1977). In a wave analysis, late respondents are believed to be similar to nonrespondents (Armstrong & Overton, 1977; Locker, 2000; Skomo et al., 2008); therefore, characteristics (demographics, pharmacy characteristics, counseling behaviors) of the first 20% of respondent pharmacists (early) and the last 20% of respondent pharmacists (late) were compared to assess nonresponse bias (Mott, Pedersen, Doucette, Gaither, & Schommer, 2001; Skomo, Deselle, & Shah, 2008; Zhao et al., 2009).

Early and later respondents differed regarding number of years pharmacists have been practicing at their practice site with a greater percentage of later respondents having worked at their practice sites for 5 years or less (60.9%) whereas the majority of early responders (63.6%) have been at their practice sites for 6 to 20 years ($\chi^2 = 10.69$; $df = 4$; $p < 0.05$). When comparing

counseling behaviors, results reveled that respondents were not statistically significantly different regarding engagement in antidepressant counseling reassurance or monitoring behaviors. Pharmacy ownership type did not statistically significantly differ among early and later respondents.

The study also compared other pharmacist and pharmacy-related characteristics, including education, job title, completion of antidepressant and/or depression-related CE hours in 2010, and provision of MTM services in 2010. These differences were not statistically significantly different. Hence, information gleaned from pharmacist's responses indicates that nonresponse bias did not appear to be a problem; hence, study respondents and study nonrespondents were not statistically significantly different.

The last limitation is related to the use of a convenience sample. One state was chosen from which to select a convenience sample of community pharmacies due to a lack of resources, which dictated limitations in the cost and scope of study implementation. Alabama was selected as the one study state. Then, community pharmacies in the state of Alabama were randomly selected, and a full time pharmacist at each pharmacy was requested to respond to the questionnaire in order to identify the relationships among different variables important to pharmacist engagement in antidepressant counseling. Therefore, this sample may not accurately represent the population of community pharmacists who engage in antidepressant medication counseling. Moreover, this study was conducted for only one patient care service related to only one disease state, antidepressant counseling for patients prescribed antidepressants for the treatment of depression. Hence, generalizing the study findings to other community pharmacists who engage in antidepressant counseling, within and beyond the state of Alabama, to other patient care services, and/or to other diseases must be done with caution.

Discussion and Implications

This study was the first known study to examine the applicability of aspects of the Theory of Planned Behavior (TPB) and the Common Sense Model (CSM) of Illness Representations together in an integrated model to identify and explain factors that affect pharmacist's provision of antidepressant counseling to patients prescribed antidepressants. This dissertation makes significant contributions to two main areas: (1) public health and pharmacy practice and (2) pharmacy-based research. This section discusses study findings and implications in each of these specific areas.

Public Health and Pharmacy Practice

Pharmacist's engagement in antidepressant counseling varied across the ten unique reassurance counseling behaviors and across the four unique monitoring behaviors. For instance, more than three-fourths (87%) of respondent pharmacists indicated that they had assessed patients' knowledge and understanding of depression and patients' understanding of the reason the doctor prescribed the antidepressant(s) for only some of their patients in the 30-day period prior to their completion of the questionnaire. Whereas, two-thirds (66%) of pharmacists reported encouraging adherence to the regimen for at least half or more of their patients prescribed antidepressants for the same 30-day time period. Hence, pharmacists indicated that they had engaged in various levels of antidepressant counseling with patients with newly prescribed antidepressants.

Their engagement in antidepressant counseling was influenced by different factors for the two types of antidepressant counseling behaviors. Pharmacists' perceptions of patient depression, antidepressant-related CE hours obtained, and self-efficacy were important factors to antidepressant reassurance counseling. Specifically, the reduced model for reassurance

counseling suggested that pharmacists who engaged in reassurance antidepressant counseling behaviors had obtained antidepressant-related CE hours in 2010, perceived more severe or negative consequences of patient depression, perceived a higher level of patient control over his/her depression, and viewed patient depression as having an episodic timeline. In addition, these pharmacists felt confident with their level of knowledge and skills pertaining to counseling patients on their antidepressant medications and/or depression.

Only one factor was important to pharmacists' engagement in antidepressant monitoring, which was the control variable, obtaining antidepressant-related CE hours in 2010. According to the reduced model for antidepressant monitoring, pharmacists' engagement in antidepressant monitoring behaviors will be facilitated if pharmacists obtain antidepressant and/or depression-related CE hours.

Pharmacy managers and practitioners may use this information to assist them in the development of action plans that will expand pharmacists' current roles in pharmacy-based mental health care initiatives, especially for depression, and will effectively engage pharmacists in antidepressant counseling behaviors. For instance, to facilitate pharmacist engagement in either of the two types of antidepressant counseling behaviors, pharmacy managers should encourage pharmacists to obtain antidepressant and/or depression-related CE hours. Obtaining related CE hours was important to both reduced study models, and could also equip pharmacists with the necessary knowledge and skills needed to increase self-efficacy to engage in antidepressant reassurance counseling behaviors. Moreover, obtaining knowledge about patient depression through education and through discussing the patient's individual experience of depression with the patient, may impact pharmacists' illness perceptions of patient depression in a manner that would facilitate engagement in antidepressant reassurance counseling.

Additionally, schools and colleges of pharmacy may choose to use the results of this study to develop effective strategies and/or make modifications to curriculum that might effectively address important factors such as perceptions of depression, self-efficacy, and developing and offering antidepressant and/or depression-related CE hours, which may help to facilitate pharmacist engagement in pharmacy-based antidepressant counseling. For instance, schools and colleges of pharmacy should examine their existing curriculum to determine if modifications should and can be made to include course materials and lectures on patient mental health issues that may arise in pharmacy practice settings. This might ideally be integrated into the communications skills courses, where students often receive their first opportunities to practice counseling patients with a variety of illnesses and conditions. Moreover, offering electives that provide more in-depth information where student pharmacists can acquire a solid knowledge base of depression and other mental health issues and where they can practice clinical skills could also be beneficial.

Furthermore, schools and colleges of pharmacy and pharmacy associations should create continuing education (CE) programs specifically tailored to address pharmacists' self-efficacy and illness perception issues. Specifically, CE programs should be tailored to provide pharmacists will the knowledge base that is necessary to provide reassurance counseling to patients with depression. These CE programs should address fundamental issues such as the criteria (symptoms) for the different diagnoses of depression (Major Depressive Disorder, Dysthymia, and Depression not otherwise specified), treatment options and what each option entails (e.g., medication type and indications, psychotherapy, combination therapy, etc.) prognosis of treatment length and expected treatment efficacy. Other CE programs should focus on the clinical aspects of depression and its treatment, as it relates to pharmacy. Additionally,

programs should provide pharmacists with the opportunity to practice medication counseling interactions as part of the CE program so that pharmacists can obtain first-hand experiences using their acquired depression knowledge and clinical skills; this may contribute to greater self-efficacy since pharmacists can practice their clinical skills, which can lead to increased confidence in their ability to engage in antidepressant counseling.

State Boards of Pharmacy and Colleges and Schools of Pharmacy are encouraged to collaborate with State Mental Health Agencies to create depression information-related components of CE programs so that the information provided to pharmacists will be standardized and obtained from a credible, mental health source. In addition, this collaborative effort may extend beyond the exchange of information about depression for CE programs to include other mental health illnesses, such as schizophrenia, anxiety disorders, and bipolar disorder, for which pharmacists can also utilize their medication knowledge and expertise, thereby increasing the potential to make a positive impact on other public mental health issues as well.

Pharmacists have an excellent opportunity to use their medication knowledge and expertise to have an impact on problems that can arise when treating depression solely in primary care through their engagement in antidepressant counseling. Some community pharmacists are engaging in antidepressant counseling for patients prescribed antidepressants for the treatment of depression, and their efforts deserve attention. Initiatives to increase pharmacists' engagement in antidepressant counseling require a concerted commitment by various public health and professional agencies. The strategies recommended in this section may help facilitate pharmacists' engagement in the important practice of antidepressant counseling.

Pharmacy-Based Research

The second contribution is to pharmacy-based research, particularly regarding the adoption of innovative patient care services in pharmacy. Departing from much of the existing literature on pharmacy-based research, the current study examined the relationship between organizational factors, environmental factors, personal factors, and pharmacists' engagement in antidepressant counseling. This study provides a unique perspective to pharmacy-based research because it investigated the impact of these factors as well as pharmacist's perceptions of patient depression on pharmacist engagement in antidepressant counseling.

Two types of antidepressant counseling behaviors were specifically examined in the current study, namely reassurance and monitoring. Reassurance counseling behaviors that were studied include the provision of pharmacist evaluation of patient illness and medication knowledge and ensuring adherence. Antidepressant monitoring behaviors that were examined included the monitoring of drug efficacy and side effects. The analyses revealed that different factors were important to these two types of antidepressant counseling behaviors.

For example, in the Reduced Study Model for reassurance counseling, consequences, control/cure of illness, episodic timeline, and self-efficacy, were found to have a relationship with and be important predictors of pharmacists' engagement in antidepressant counseling – reassurance. Hence, self-efficacy was an important factor to pharmacist engagement in reassurance counseling; however, it was not an important factor to pharmacist engagement in antidepressant monitoring. This difference may be due to the fact that engagement in reassurance counseling behaviors requires the pharmacist to have a certain level of knowledge about antidepressants and depression and possess the skills and ability to convey information pertaining to patient depression and its treatment to patients in a manner they can comprehend. In addition, pharmacists need to be comfortable engaging in reassurance antidepressant counseling

with patients. Therefore, pharmacists also need to feel confident with their communication skills for counseling patients with depression. This is not as much the case for engaging in antidepressant monitoring behaviors. For antidepressant monitoring, pharmacists have the skills and knowledge needed to monitor antidepressant efficacy and side effects. Therefore, self-efficacy is not an important factor to pharmacists' engagement in antidepressant monitoring.

Interestingly, organizational influences were not significant predictors for either type of counseling behaviors. The reduced relationship between organizational influences and antidepressant counseling may be explained by pharmacist's work. That is, the effects of organizational influences may be moderated by pharmacist's work orientation (professional knowledge or technical competence).

The correlation analysis between organizational influences and the pharmacist's work orientation revealed a weak correlation ($r = \pm 0.25$, $p < 0.01$). Accordingly, the relationship between organizational influences and antidepressant counseling might be stronger for pharmacists whose work orientation is focused more toward professional knowledge and less strong for pharmacists whose work orientation is more inclined toward technical competence. Since the model analyzing antidepressant counseling – reassurance explained four times the amount of the variance explained by the model for monitoring behaviors, this also suggests that other internal organizational factors may play an important role in pharmacists' decisions to engage in antidepressant counseling – reassurance behaviors.

Perceptions shape individuals' attitudes and behaviors and can be influenced by external factors such as organizations and the environment, therefore it was deemed important to investigate all of these factors to gain a better and more thorough understanding of pharmacists engagement in antidepressant counseling. This presumption was supported by the findings of the

study; in particular, the findings that three of five illness perceptions of patient depression and self-efficacy were significant predictors of pharmacists' engagement in reassurance counseling. This suggests that ignoring the importance of personal factors may hinder understanding of pharmacist antidepressant counseling decisions.

Using a framework that incorporates personal factors might provide a more comprehensive understanding of the reasons why pharmacists engage in antidepressant counseling behaviors. Gaining a better understanding of the influence that personal factors have on pharmacists' decisions regarding engaging in antidepressant counseling may help researchers plan for ways to effectively facilitate pharmacists engagement in the provision of these and other innovative patient care services in actual pharmacy practice.

Future Directions

The findings from this study highlight the need to address other important questions in future research endeavors. As previously discussed in the literature review, this study is the first known study to examine the applicability of aspects of the Theory of Planned Behavior (TPB) and the Common Sense Model (CSM) of Illness Representations together in an integrated model to identify and explain factors that affect pharmacist's provision of antidepressant counseling to patients prescribed antidepressants. The findings of this study identified factors important to pharmacists' engagement in antidepressant counseling. Future research should continue to explore and identify other factors important to pharmacist's provision of antidepressant counseling such as level of support and/or collaboration with other health and mental health care professionals, and reimbursement policies and procedures that may impact pharmacists' engagement in antidepressant counseling.

One potential area for future research would be to investigate patient outcomes to gain an understanding of the impact of pharmacist's engagement in antidepressant counseling. By examining patient outcomes, the impact of pharmacist engagement in this important practice could be determined. This would provide a more comprehensive assessment of pharmacist provided antidepressant counseling.

Another opportunity for future research would be to conduct a follow-up study across a longer period of time, to ascertain if pharmacist provided antidepressant counseling is a sustained patient care service. This would be especially important to examine for pharmacists who have recently decided to engage in antidepressant counseling. Examining and identifying factors important to their initial adoption of antidepressant counseling could help in the development of effective strategies for increasing the adoption of this important pharmacy-based practice.

This study examined antidepressant counseling in community pharmacy practice settings. Therefore, research might also be conducted to explore the nature and extent of antidepressant counseling across different pharmacy practice settings and across states in comparison with states that have different counseling laws, which require pharmacists to counsel patients with new prescriptions. States with varying levels of regulatory intensity pertaining to patient counseling by pharmacists may reveal differences in extent of pharmacists' engagement in antidepressant counseling.

Conclusions

This study was the first known study to examine the applicability of aspects of the Theory of Planned Behavior (TPB) and the Common Sense Model (CSM) of Illness Representations together in an integrated model to identify and explain factors that affect pharmacist's provision of antidepressant counseling to patients prescribed antidepressants. This

study examined the relationships of pharmacists' perceptions of patient depression, their self-efficacy, organizational influences, environmental influences, and their engagement in antidepressant counseling. The findings identified relationships between pharmacist's perceptions and their engagement in antidepressant counseling. However, future research is still needed to identify other factors important to pharmacists' engagement in antidepressant counseling.

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Appendix A

Study Initial Notification Postcard

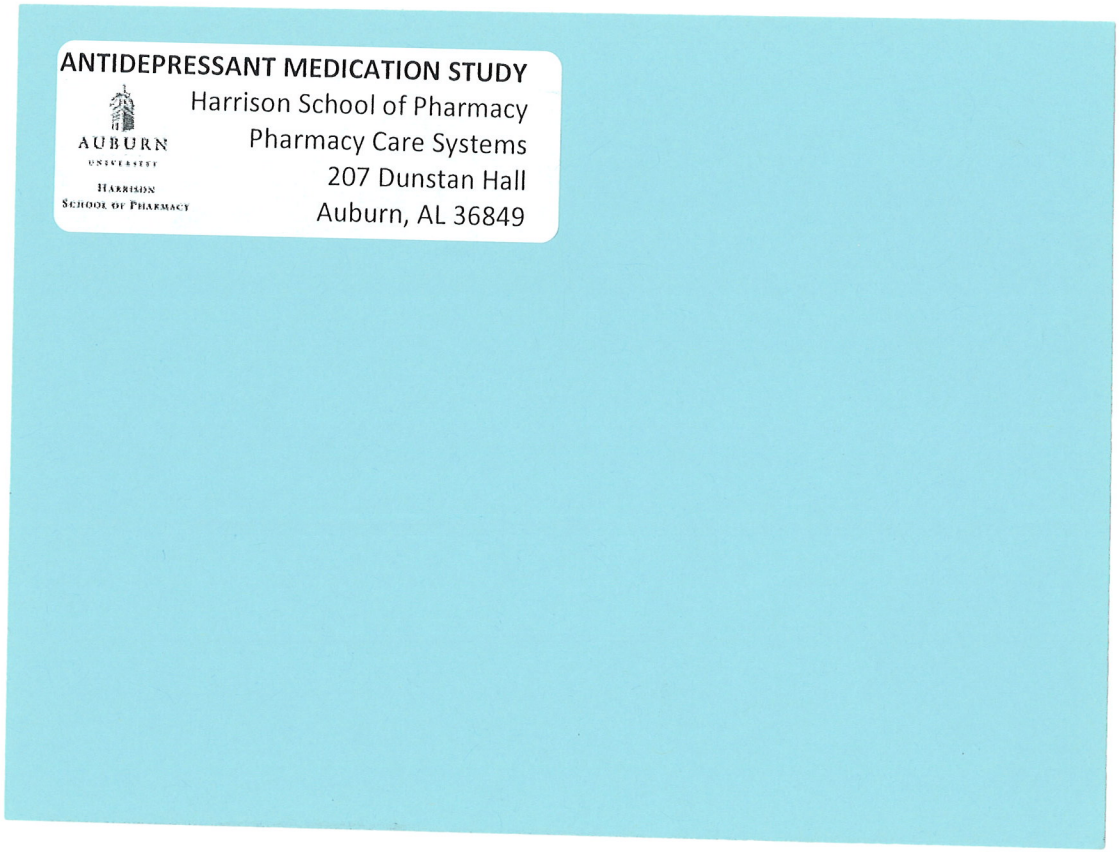
Dear Alabama Community Pharmacist,

I am writing to request your assistance. I, a national certified counselor and researcher, am working under the direction of faculty members, Dr. Jan Kavookjian and Dr. Salisa Westrick, conducting a study to gain better understanding of factors that impact pharmacists' provision of care to patients prescribed antidepressants.
A complete study packet with the questionnaire and more information about this Auburn University approved study will be mailed to you within the next few days. If you prefer to participate now, please go online to **http://www.bit.ly/breland**
and when prompted, enter this study **ID #**_____. Be assured that your response is confidential.

Even if you do not provide antidepressant counseling, your participation is essential to this research. Including the pharmacy manager, if there are two or more full time pharmacists who regularly practice at this pharmacy, any one of you can participate in this study.

Thank you in advance for your time and your help with this project that may impact the care of Alabamians.

Sincerely,
Michelle Breland, NCC, Ph.D. Candidate
Harrison School of Pharmacy


ANTIDEPRESSANT MEDICATION STUDY
AUBURN
UNIVERSITY
HARRISON
SCHOOL OF PHARMACY
Harrison School of Pharmacy
Pharmacy Care Systems
207 Dunstan Hall
Auburn, AL 36849

Appendix B

Initial Mailing Information/Cover Letter

DEPARTMENT
OF PHARMACY
CARE SYSTEMS

AUBURN UNIVERSITY
HARRISON SCHOOL OF PHARMACY

Dear Alabama Community Pharmacist,

I am writing to ask for your assistance. You are invited to participate in an Auburn University approved research study of community pharmacists being conducted to gain a better understanding of factors that impact pharmacist's provision of care to patients prescribed antidepressants. **Even if you do not provide antidepressant counseling at your pharmacy, your participation is essential to this research, which may impact the care of Alabamians.**

Your community pharmacy was selected to receive the enclosed 5-page questionnaire to be completed by a full time pharmacist at your pharmacy. Including the pharmacy manager, if there are two or more full time pharmacists who regularly practice at this pharmacy, any one of you can participate in this study. Because I know that you are very busy, I have designed the questionnaire to take no more than 15 minutes of your time. You may choose your preference of two available response methods: (1) a paper questionnaire or (2) an online questionnaire. Please see the front cover of the questionnaire for more information about the online response method.

The risks involved in this study are minimal. Only the principal investigator and her research advisors will have access to the data. Data included in study reports will be presented in aggregated form; no individual level data will be disclosed. Participation in this study is voluntary and your responses are completely confidential. No information about individual respondents or pharmacies will be released. You may notice that the questionnaire has a code number written on it; this allows me to monitor responses and follow-up. All codes will be stored in a locked file and kept separate from the information collected to ensure your responses cannot be linked to you or your pharmacy in any way.

Because your participation is essential to my research, I would like to thank you for your time. When you complete and return/submit either the paper or electronic questionnaire with optional contact information within two weeks of receiving this study packet, you will be entered into a drawing for the chance to win one of two $50 Visa gift cards. Your contact information will **only** be used to contact you if you win a Visa gift card; your contact information will be destroyed once the drawing has ended and the winners have been notified.

If you have any questions about this study, please contact me at (251) 689-6126, or brelaml@auburn.edu or my research advisors, Dr. Jan Kavookjian at (334) 844-8301 and Dr. Salisa Westrick at (334) 844-8314. We will be more than happy to answer any questions you may have regarding this study.

If you have questions about your rights as a research participant, you may contact the Auburn University Office of Human Subjects Research or the Institutional Review Board by phone (334) 844-5966 or e-mail at hsubjec@auburn.edu or IRBChair@auburn.edu

Thank you in advance for your participation in this study. I look forward to receiving your completed questionnaire.

HAVING READ THIS INFORMATION, YOU MUST DECIDE IF YOU WANT TO PARTICIPATE IN THIS RESEARCH PROJECT. IF YOU DECIDE TO PARTICIPATE, THE DATA YOU PROVIDE IN EITHER THE PAPER OR ONLINE QUESTIONNAIRE WILL SERVE AS YOUR AGREEMENT TO DO SO.

Sincerely,

Michelle L. Breland

Michelle L. Breland, M.Ed., NCC
Doctoral Candidate

The Auburn University Institutional Review Board has approved this document for use from 3/15/11 to 3/14/12
Protocol # 11-100 EP1103

207 Dunstan Hall, Auburn, AL 36849-5506; Telephone: 334-844-5152; Fax: 334-844-8307
www.auburn.edu

Appendix C

Follow-up Mailing Information/Cover Letter

DEPARTMENT
OF PHARMACY
CARE SYSTEMS

AUBURN UNIVERSITY
HARRISON SCHOOL OF PHARMACY

Dear Alabama Community Pharmacist,

About two weeks ago I sent a questionnaire to your pharmacy that asked for your help. You have been invited to participate in an Auburn University approved research study of community pharmacists being conducted to gain a better understanding of factors that impact pharmacist's provision of care to patients prescribed antidepressants. I hope you found the research topic to be interesting and important. However, at the time of this mailing, I still have not received a response from your pharmacy. If you have responded since this follow-up letter, thank you very much for your time and your help! If you have not yet returned your completed questionnaire, please do so within the next week.

Your pharmacy was selected to receive the enclosed 5-page questionnaire to be completed by a full time pharmacist at your pharmacy. Including the pharmacy manager, if there are two or more full time pharmacists who regularly practice at this pharmacy, any one of you can participate in this study. This questionnaire is designed to take no more than 15 minutes of your time. You may choose your preference of two available response methods: (1) a paper questionnaire or (2) an online questionnaire. Please see the front cover of the questionnaire for more information about the online response method.

The risks involved in this study are minimal. Only the principal investigator and her research advisors will have access to the data. Data included in study reports will be presented in aggregated form; no individual level data will be disclosed. Participation in this study is voluntary and your responses are completely confidential. No information about individual respondents or pharmacies will be released. You may notice that the questionnaire has a code number written on it; this allows me to monitor responses and follow-up. All codes will be stored in a locked file and kept separate from the information collected to ensure your responses cannot be linked to you or your pharmacy in any way.

Because your participation is essential to my research, I would like to thank you for your time. When you complete and return/submit either the paper or electronic questionnaire with optional contact information within one week of receiving this study packet, you will be entered into a drawing for the chance to win a $50 Visa gift card. Your contact information will **only** be used to contact you if you win the Visa gift card; your contact information will be destroyed once the drawing has ended and the winner has been notified.

If you have any questions about this study, please contact me at (251) 689-6126, or brelaml@auburn.edu or my research advisors, Dr. Jan Kavookjian at (334) 844-8301 and Dr. Salisa Westrick at (334) 844-8314. We will be more than happy to answer any questions you may have regarding this study.

If you have questions about your rights as a research participant, you may contact the Auburn University Office of Human Subjects Research or the Institutional Review Board by phone (334) 844-5966 or e-mail at hsubjec@auburn.edu or IRBChair@auburn.edu.

Thank you in advance for your participation in this study. I look forward to receiving your completed questionnaire.

HAVING READ THIS INFORMATION, YOU MUST DECIDE IF YOU WANT TO PARTICIPATE IN THIS RESEARCH PROJECT. IF YOU DECIDE TO PARTICIPATE, THE DATA YOU PROVIDE IN EITHER THE PAPER OR ONLINE QUESTIONNAIRE WILL SERVE AS YOUR AGREEMENT TO DO SO.

Sincerely,

Michelle L. Breland

Michelle L. Breland, M.Ed., NCC
Doctoral Candidate

The Auburn University Institutional Review Board has approved this document for use from 3/15/11 to 3/14/12
Protocol # 11-100 EP 1103

207 Dunstan Hall, Auburn, AL 36849-5506; Telephone: 334-844-5152; Fax: 334-844-8307
www.auburn.edu

Appendix D

Electronic/Online Information Letter

(NOTE: DO NOT AGREE TO PARTICIPATE UNLESS IRB APPROVAL INFORMATION WITH CURRENT DATES HAS BEEN ADDED TO THIS DOCUMENT)

INFORMATION LETTER
For a Research Study entitled
"An Exploratory Study of Pharmacy-Based Antidepressant Medication Counseling"

You are invited to participate in a research study to explore pharmacists' perceptions of pharmacy-based antidepressant medication counseling. Your assistance is important in helping us gain a better understanding of factors that impact pharmacist's provision of care to patients prescribed antidepressants. The study is being conducted by Michelle Breland, PhD Candidate, under the direction of Dr. Jan Kavookjian and Dr. Salisa Westrick in the Auburn University Harrison School of Pharmacy, Department of Pharmacy Care Systems. You were selected as a possible participant because you are a pharmacist at a community pharmacy.

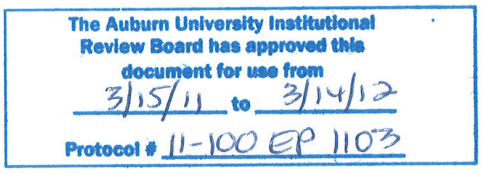
What will be involved if you participate? Your participation is completely voluntary. If you decide to participate in this research study, you will be asked to complete the 5-page paper questionnaire or you may choose to complete an electronic version of the questionnaire. Your total time commitment will be no more than 15 minutes.

Are there any risks or discomforts? The risks associated with participating in this study are minimal. To minimize these risks, only the principal investigator and her research advisors will have access to the data. Data included in study reports will be presented in aggregated form; no individual level data will be disclosed.

Are there benefits to yourself or others? If you agree to participate in this study, your responses will help the researchers learn more about factors that impact the provision of pharmacy-based antidepressant medication counseling, which may be used to help develop effective strategies that may facilitate pharmacist adoption of this important practice.

Will you receive compensation for participation? To thank you for your time, each individual who completes and returns/submits either the paper or electronic questionnaire will be entered into a drawing for a chance to win either: (a) two $50 Visa gift cards if surveys are returned within two weeks of receiving the initial survey packet, or (b) a chance to win one $50 Visa Gift card if surveys are returned within one week of receiving the follow-up mailing. You will be asked to provide a form of contact (either a phone number or an email address) at the end of the questionnaire if you wish to be entered into the drawing so you can be contacted if you win a Visa gift card. The contact information you provide will **only** be used to contact you if you win a Visa gift card. Your contact information will be destroyed as soon as the drawing has ended and the winners have been notified.

Are there any costs? There are no costs to you to participate in this study.



If you change your mind about participating you may withdraw at any time by exiting Qualtrics and closing your browser window. If you choose to withdraw, your data can be withdrawn as long as it is identifiable. Once you've submitted anonymous data, it cannot be withdrawn since it will be unidentifiable. Your decision about whether or not to participate or to stop participating will not jeopardize your future relations with Auburn University, the Harrison School of Pharmacy or the Department of Pharmacy Care Systems.

Any data obtained in connection with this study will remain anonymous. We will protect your privacy and the data you provide through data encryption, and password and firewall protection. You may notice that the questionnaire has a code number written on it; this allows me to monitor responses and follow-up. All codes will be stored in a locked file and kept separate from the information collected to ensure your responses cannot be linked to you or your pharmacy in any way. All data collected in this study will be presented in aggregate form; no individual level data will be released. Information collected through your participation in this study may be used to fulfill an educational requirement for the degree of doctor of philosophy (Ph.D.) of Pharmacy Care Systems at Auburn University, published in a professional journal, and/or presented at professional meetings.

If you have questions about this study, please contact Michelle Breland at (251) 689-6126, or brelaml@tigermail.auburn.edu or you may contact my research advisors, Dr. Jan Kavookjian at (334) 844-8301 and Dr. Salisa Westrick at (334) 844-8314. We will be more than happy to answer any questions you may have regarding this study.

If you have questions about your rights as a research participant, you may contact the Auburn University Office of Human Subjects Research or the Institutional Review Board by phone (334) 844-5966 or e-mail at hsubjec@auburn.edu or IRBChair@auburn.edu.

HAVING READ THE INFORMATION ABOVE, YOU MUST DECIDE IF YOU WANT TO PARTICIPATE IN THIS RESEARCH PROJECT. IF YOU DECIDE TO PARTICIPATE, PLEASE CLICK ON THE LINK BELOW. YOU MAY PRINT A COPY OF THIS LETTER TO KEEP.

Michelle Breland, M.Ed., NCC
Principal Investigator

Salisa Westrick, Ph.D.
Co-Investigator

Jan Kavookjian, MBA, Ph.D.
Co-Investigator

The Auburn University Institutional Review Board has approved this document for use from March 15, 2011 to March 14, 2012. Protocol # 11-100 EP 1103.

Appendix E

Study Questionnaire

AUBURN
UNIVERSITY

HARRISON
SCHOOL OF PHARMACY

PHARMACY-BASED ANTIDEPRESSANT MEDICATION COUNSELING

A study to identify factors affecting pharmacist provision of care to patients prescribed antidepressants.

Please complete this questionnaire even if you do not provide antidepressant counseling to patients prescribed antidepressants*

To participate by completing an electronic version of this questionnaire, please go online to
http://www.bit.ly/breland
and when prompted, enter the following study ID #_____.

Questions about patients with depression

(1.) Please provide your general professional viewpoints regarding patients with depression by indicating your disagreement/agreement with each of the following statements.

Your general perceptions of depression:	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
a. Their depression is a serious condition.	❒	❒	❒	❒	❒
b. Their depression has had major consequences on their life.	❒	❒	❒	❒	❒
c. Their depression has become easier for them to live with.	❒	❒	❒	❒	❒
d. Their depression does not have much effect on their life.	❒	❒	❒	❒	❒
e. Their depression has strongly affected how others see them.	❒	❒	❒	❒	❒
f. Their depression has strong economic and financial consequences for them.	❒	❒	❒	❒	❒
g. Their depression is debilitating.	❒	❒	❒	❒	❒
h. Their depression will improve in time.	❒	❒	❒	❒	❒
i. There is a lot they can do to control their symptoms.	❒	❒	❒	❒	❒
j. There is little that can be done to improve their depression.	❒	❒	❒	❒	❒
k. Their treatment will be effective in curing their depression.	❒	❒	❒	❒	❒
l. What they do determines whether their depression gets better or worse.	❒	❒	❒	❒	❒
m. There is a lot I can do to control their symptoms.	❒	❒	❒	❒	❒
n. What I do determines whether their depression gets better or worse.	❒	❒	❒	❒	❒
o. Their depression is likely to be permanent rather than temporary.	❒	❒	❒	❒	❒
p. Their depression will last for a long time.	❒	❒	❒	❒	❒
q. Their depression may change from time to time.	❒	❒	❒	❒	❒
r. There will be periods of depression and periods of improvement.	❒	❒	❒	❒	❒

---Please continue to the next page---

Questions about your current antidepressant counseling activities

(2.) In the **last 30 days,** please indicate how many patients with **newly prescribed antidepressants - during the first 90 days of their treatment -** you engaged in the following **counseling** activities.

Antidepressant medication counseling activities:	**None**	**Few**	**Some**	**About Half**	**More than Half**	**Almost All**	**All**
a. Assessed patients' knowledge and understanding of depression.	❒	❒	❒	❒	❒	❒	❒
b. Assessed patients' understanding of the reason the doctor prescribed the antidepressant(s).	❒	❒	❒	❒	❒	❒	❒
c. Provided ***verbal*** information about the drug regimen and its purpose.	❒	❒	❒	❒	❒	❒	❒
d. Provided ***written*** information in addition to the patient medication handout/guide about the drug regimen and its purpose.	❒	❒	❒	❒	❒	❒	❒
e. Provided information about symptoms and/or causes of depression.	❒	❒	❒	❒	❒	❒	❒
f. Provided information about the time course of response to antidepressant medication.	❒	❒	❒	❒	❒	❒	❒
g. Discussed options for managing side effects.	❒	❒	❒	❒	❒	❒	❒
h. Addressed patients concerns or questions about drug efficacy and/or benefits.	❒	❒	❒	❒	❒	❒	❒
i. Asked patients about potential barriers to taking the antidepressant(s) as prescribed.	❒	❒	❒	❒	❒	❒	❒
j. Encouraged adherence to the regimen.	❒	❒	❒	❒	❒	❒	❒
k. Recommended a dose time change from morning to evening or vice versa.	❒	❒	❒	❒	❒	❒	❒
l. Implemented a dose time change that split the dose into more or less administrations.	❒	❒	❒	❒	❒	❒	❒
m. Suggested a pill organizer and/or tips for remembering to take antidepressants.	❒	❒	❒	❒	❒	❒	❒
n. Contacted patients' prescribers to adjust medication doses due to efficacy.	❒	❒	❒	❒	❒	❒	❒
o. Contacted patients' prescribers to adjust medication doses due to side effects.	❒	❒	❒	❒	❒	❒	❒
p. Contacted patients' prescribers to discuss switching the prescribed antidepressant(s).	❒	❒	❒	❒	❒	❒	❒
q. Contacted patients' prescribers to discuss adding additional medications to existing regimens.	❒	❒	❒	❒	❒	❒	❒
r. Discussed options for reducing costs.	❒	❒	❒	❒	❒	❒	❒

---Please continue to the next page---

(3.) In the **last 30 days,** please indicate how many patients with **newly prescribed antidepressants - during the first 90 days of their treatment -** *you or someone on your behalf* engaged in the following **adherence monitoring** activities.

Adherence monitoring activities:	None	Few	Some	About Half	More than Half	Almost All	All
a. Reviewed patients' medication profiles for any potentially harmful drug interactions.	❒	❒	❒	❒	❒	❒	❒
b. Monitored patients' responses to therapy.	❒	❒	❒	❒	❒	❒	❒
c. Monitored occurrence of side effects.	❒	❒	❒	❒	❒	❒	❒
d. Reminded patients about upcoming prescription refills.	❒	❒	❒	❒	❒	❒	❒
e. Contacted patients regarding a late refill.	❒	❒	❒	❒	❒	❒	❒
f. Reviewed patients' medication profiles for any potentially harmful medication allergies.	❒	❒	❒	❒	❒	❒	❒

(4.) Please indicate your disagreement/agreement with the following statements about **current factors** that may affect antidepressant medication counseling.

Current factors that may affect antidepressant counseling:	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
a. My time is sufficient to provide individual attention to patients prescribed antidepressants.	❒	❒	❒	❒	❒
b. The privacy area in my pharmacy is adequate to provide antidepressant counseling.	❒	❒	❒	❒	❒
c. The patient profile information available to me is sufficient to manage antidepressant therapy.	❒	❒	❒	❒	❒
d. I am confident with my current level of knowledge in medication therapy for depression.	❒	❒	❒	❒	❒
e. I am confident with my communication skills for counseling patients with depression.	❒	❒	❒	❒	❒
f. I am comfortable counseling patients with depression.	❒	❒	❒	❒	❒
g. I am confident when I communicate with prescribers about recommendations for our mutual patients.	❒	❒	❒	❒	❒
h. Prescribers are supportive of my recommendations.	❒	❒	❒	❒	❒
i. There is high public expectation of pharmacists to manage antidepressant drug therapy.	❒	❒	❒	❒	❒
j. There is high pharmacy management expectation of pharmacists to manage antidepressant drug therapy.	❒	❒	❒	❒	❒
k. Patients with depression want and/or seek support from pharmacists.	❒	❒	❒	❒	❒

---Please continue to the next page---

(5.) Antidepressant counseling means providing patients with information about their illness and prescribed drug therapy, monitoring drug efficacy and side effects, ensuring adherence, and working with prescribers to modify drug therapy when needed. Please indicate your disagreement/agreement with the following statements about your ***future plans*** to provide antidepressant medication counseling ***in addition to*** the current counseling provided at your pharmacy.

Future plans to provide antidepressant counseling:	**Strongly Disagree**	**Disagree**	**Neither Agree nor Disagree**	**Agree**	**Strongly Agree**
a. I plan to speak with pharmacy/store management about offering antidepressant counseling ***in addition to*** the current counseling provided to patients with newly prescribed antidepressants.	❒	❒	❒	❒	❒
b. I will actively work to ensure a role for pharmacists in the provision of antidepressant counseling to patients with depression.	❒	❒	❒	❒	❒
c. I intend to provide antidepressant counseling ***in addition to*** the current counseling provided to patients with depression.	❒	❒	❒	❒	❒
d. I will work to ensure that adequate reimbursement is established for the provision of antidepressant counseling at my pharmacy.	❒	❒	❒	❒	❒

Questions about your practice site

(6.) In each of the following three groups, please describe your practice site in terms of its: (*Place an "X"* [☒] *on the line*)

Practice Site Orientation:

Patient-focused _____ Product-focused

Practice Site Focus:

Quality of service _____ Quantity of service

Pharmacist's Work:

Professional knowledge _____ Technical competence

(7.) Compared to other full time pharmacists at your practice site, how often do you provide antidepressant counseling to patients?

❒ More often
❒ About the same
❒ Less often
❒ Don't know
❒ Not applicable – Only pharmacist at this pharmacy

---Please continue to the next page---

(8.) Please indicate whether your pharmacy provided **any** MTM services in 2010.

❒ No

❒ Yes ➔ Please indicate the type of MTM services offered (check all that apply):

❒ Asthma
❒ Diabetes
❒ Depression
❒ Hyperlipidemia
❒ Hypertension
❒ Other: Please specify _____

Questions about you and your practice site

Your Gender: ❒ Male ❒ Female

Education (check all that apply) ➔
❒ B.S. Pharmacy
❒ PharmD
❒ Residency
❒ Masters
Other: Specify …….

Job title (check only one) ➔
❒ Staff pharmacist
❒ Manager
❒ Owner/partner
Other: Specify ……

Practice site (check only one)
❒ Single store independent pharmacy
❒ Multi-store independent pharmacy
❒ Chain pharmacy
❒ Mass merchandiser
❒ Grocery
❒ Clinic
Other: Specify ……

How long have you practiced as a Pharmacist: _____ Years

How long have you practiced at this pharmacy: _____ Years

In 2010, how many hours of CE related to depression and/or antidepressants did you obtain? _____ Hours

Please describe what CE related to depression, if any, you obtained in 2010._____

_____

_____

Your practice site:

Number of staff pharmacists employed (both PharmD and B.S) _____ FTEs (Full-time equivalent, 40 hrs/wk)

Number of pharmacists who currently provide antidepressant medication counseling _____ Antidepressant Counseling

Average prescription volume per **day:** _____ Prescriptions

Average antidepressant prescription volume per **day:** _____ Antidepressant Prescriptions

---Thank you for your time and participation. Please return the completed survey in the enclosed envelope ---

---

If you wish to be entered into the drawing for the $50 Visa Gift cards, please provide your contact information (including phone number or email address) in the space below so you can be contacted if you are selected in the drawing to receive one of two $50 Visa gift cards. The contact information you provide will **only** be used to contact you if you win a Visa gift card.

Phone number **or** Email address: _____

Appendix F

Evaluation of Multi-Item Measures

Scale Measures

Before conducting the bivariate or multivariate data analyses of data collected, psychometric evaluations of eight multi-item scale measures used in this study were conducted. Each of these analyses was conducted using raw data with available cases and therefore the number of cases available for each analysis was not 119, but varied and was noted for each table. First, the evaluation of the multi-item measures began with an examination of the corrected item-to-total correlations for the items that comprise each scale; it was presumed that items were measured at the interval level. Churchill (1979) defined corrected item-to-total correlation as the correlation of the score of a particular item with the total score of the scale with the particular item deleted. The results of the analyses for the illness perceptions of depression subscales are presented in Table F-1 and results of the analyses for the scales for self-efficacy, organizational influences, and environmental influences are presented in Table F-2, respectively.

Upon close examination of Tables F-1 and F-2, it is revealed that with the exceptions of five items (CONSEQ3, CONSEQ5, CCILL1, CCILL4, ENVIRINF1) with corrected item-to-total correlations ranging from 0.09 to 0.30, all items displayed acceptable item-to-total correlations of 0.35 or higher. Low corrected item-to-total correlations suggested that these five items were not correlated well with the remaining items in their respective scales. As a result, the five items with low corrected item-to-total correlations (CONSEQ3, CONSEQ5, CCILL1

Table F-1
Corrected Item-to-Total Correlation for Multi-Item Scales for Illness Perceptions of Depression

Consequences (CONSEQ) *N* = 113	Their depression is a serious condition	CONSEQ1	.51
	Their depression has had major consequences on their life	CONSEQ2	.62
	Their depression has become easier for them to live with	CONSEQ3	.23
	Their depression does not have much effect on their life	CONSEQ4	.47
	Their depression has strongly affected how others see them	CONSEQ5	.25
	Their depression has strong economic and financial consequences for them	CONSEQ6	.37
	Their depression is debilitating	CONSEQ7	.46
Control/Cure of Illness (CCILL) *N* = 116	Their depression will improve in time	CCILL1	.30
	There is a lot they can do to control their symptoms	CCILL2	.37
	There is little that can be done to improve their depression	CCILL3	.43
	Their treatment will be effective in curing their depression	CCILL4	.09
	What they do determines whether their depression gets better or worse	CCILL5	.35
Control/Cure by HCP (CCHCP) *N* = 118	There is a lot I can do to control their symptoms	CCHCP1	.64
	What I do determines whether their depression gets better or worse	CCHCP2	.64
Chronic Timeline (TIMECH) *N* = 118	Their depression is likely to be permanent rather than temporary	TIMECH1	.56
	Their depression will last for a long time	TIMECH2	.56
Episodic Timeline (TIMEEP) *N* = 118	Their depression may change from time to time	TIMEEP1	.52
	There will be periods of depression and periods of improvement	TIMEEP2	.52

Table F-2
Corrected Item-to-Total Correlation for Multi-Item Scales for Self Efficacy, Organizational Influences, and Environmental Influences

Self Efficacy (SELFEF) *N* = 118	I am confident with my current level of knowledge in medication therapy for depression	SELFEF1	.68
	I am confident with my communication skills for counseling patients with depression	SELFEF 2	.67
	I am comfortable counseling patients with depression	SELFEF 3	.73
	I am confident when I communicate with prescribers about recommendations for our mutual patients	SELFEF 4	.66
Organizational Influences (ORGINF) *N* = 117	My time is sufficient to provide individual attention to patients prescribed antidepressants	ORGINF1	.43
	The privacy area in my pharmacy is adequate to provide antidepressant counseling	ORGINF2	.35
	The patient profile information available to me is sufficient to manage antidepressant therapy	ORGINF3	.45
Environmental Influences (ENVIRINF) *N* = 118	Prescribers are supportive of my recommendations	ENVIRINF1	.17
	There is high public expectation of pharmacists to manage antidepressant drug therapy	ENVIRINF2	.67
	There is high pharmacy management expectation of pharmacists to manage antidepressant drug therapy	ENVIRINF3	.58
	Patients with depression want and/or seek support from pharmacists	ENVIRINF4	.37

CCILL4, ENVIRINF1) were removed from their respective scales to improve the internal consistency reliability of the scales before proceeding with further analyses.

Tables F-3 and F-4 summarize the reliability and summary statistics for the revised scales for variables specific to illness perceptions of patient depression scales and self-efficacy, organizational influences, and environmental influences, respectively. Reliability analyses for each scale revealed acceptable reliability; the low reliability reported for the illness perception subscales of control/cure of illness (0.60) and episodic timeline (0.68) were similar to reliability statistics reported by the creators of the original scales. Reliability coefficients of SELFEF was greater than 0.80, while the reliability coefficient of organizational influences was 0.60, which was the lowest among the eight measures included in this study. Nonetheless, it was considered to be acceptable (Schmitt, 1996). The remaining measures including CONSEQ, CCHCP, TIMECH, and ENVIRNINF had reliability coefficients in the range of 0.72 – 0.78.

In addition, per-item means for each scale are displayed in Tables F-3 and F-4. Per-item means of scales related to illness perceptions of patient depression ranged from 2.98 to 4.16 and from 3.01 to 3.85 for the self-efficacy, organizational influences, and environmental influences, respectively, with theoretical ranges of 1 to 5. Therefore, the per-item means analyses suggest no evidence of ceiling effects. This was confirmed during a separate analysis that examined the frequency distribution for each item.

Since multi-item scales were created using theoretical frameworks and/or conceptual definitions, it was also important to assess discriminant validity of these measures. Factor analysis was used to examine how well items in the same scale load on the same component while remaining distinct from other components. Tables F-5 and F-6 show the results of the Principal Component Factor Analyses using varimax rotation for the illness perceptions of

Table F-3
Statistics for Purified Multi-Item Scales for Illness Perceptions of (Patient) Depression

Scale	Items[a]	Reliability[b]	Per-Item Mean	Variance
Consequences (N = 115)	7/5	.72	4.04	0.12
Control/Cure of Illness (N = 117)	5/3	.63	3.86	0.54
Control/Cure by HCP (N = 118)	2/2	.78	2.98	0.42
Chronic Timeline (N = 118)	2/2	.72	2.98	0.76
Episodic Timeline (N = 118)	2/2	.68	4.16	0.01

[a]Items displayed were number of items in original measure and number of items in final measure.
[b]Cronbach coefficient alpha was used.

Table F-4
Statistics for Purified Multi-Item Scales for Self Efficacy, Organizational and Environmental Influences

Scale	Items[a]	Reliability[b]	Per-Item Mean	Variance
Self Efficacy (N = 118)	4/4	.84	3.85	.04
Organizational Influences (N = 117)	3/3	.60	3.14	.15
Environmental Influences (N = 118)	4/3	.74	3.01	.18

[a]Items displayed were number of items in original measure and number of items in final measure.
[b]Cronbach coefficient alpha was used.

patient depression measures and the self-efficacy, organizational influences, and environmental influences measures, respectively. Confirmatory Factor Analysis was used for the components in Table F-5 since these items are derived from previously validated measures, which comprise five components. The other study measures, which are listed in Table F-6, were examined using Exploratory Factor Analysis to determine their factor loadings. Only components with eigenvalues greater than one were included.

Table F-5 reveals that five components were extracted for five multi-item scales for illness perceptions of patient depression. Overall, each scale had one underlying component. The control/cure of illness scale is the exception. Rather than loading on a single component, one item in this control/cure of illness scale loaded on two components. Components 1 and 2 focus on control/cure by the health care provider and control/cure of illness, respectively. Since only one item in the control/cure scale loaded on two factors, the decision was made to keep the item in the original scale (control/cure of illness) because it loaded more heavily in the scale it was originally developed to load in. Further examination of Table F-5 reveals that no other items loaded on more than one component.

Turning to Table F-6, which utilized Exploratory Factor Analysis (EFA) using Principal Components Analysis with varimax rotation, three components were extracted for the three multi-item scales. Unlike the illness perceptions of patient depression subscales, only one component is extracted for each of these three multi-item scales. There was no observed cross loading of items for any components. Hence, all measures for self-efficacy, organizational influences, and environmental influences were retained.

Table F-5
Factor Extraction for Items in Multi-Item Scales for Illness Perceptions of Depression[a]

	Component[b]				
Items	1	2	3	4	5
Consequences					
Their depression is serious condition	0.82				
Depression has major consequences on their life	0.86				
Depression does not have much effect on their life	0.72				
Their depression is debilitating	0.52				
Control/Cure of Illness					
There is a lot they can do to control their symptoms			0.83		
There is little that can be done to improve their depression			0.78		
What they do determines whether their depression gets better or worse		0.38	**0.56**		
Control/Cure by Health Care Provider					
There is a lot I can do to control their symptoms		0.84			
What I do determines whether their depression gets better or worse		0.87			
Chronic Timeline					
Their depression is likely to be permanent rather than temporary				0.85	
Their depression will last for a long time				0.85	
Episodic Timeline					
Their depression may change from time to time					0.84
There will be periods of depression and periods of improvement					0.86

[a] $N = 119$.
[b] Principal Component Analysis was performed using varimax rotation. Only components with eigenvalues greater than 1 are included. Only coefficients with value greater than 0.35 are listed.

Table F-6
Factor Extraction for Items in Multi-Item Scales for Self Efficacy, Organizational and Environmental Influences[a]

	Component[b]		
Items	1	2	3
Self Efficacy			
Confidence with current level of knowledge in medication therapy for depression	0.79		
Confidence with communication skills for counseling patients with depression	0.83		
Comfortable counseling patients with depression	0.87		
Confident communicating with prescribers	0.77		
Organizational Influences			
Time is sufficient to provide individual attention to patients prescribed antidepressants			0.81
Privacy area in my pharmacy is adequate to provide antidepressant counseling			0.62
Patient profile information is sufficient to manage antidepressant therapy			0.71
Environmental Influences			
High public expectation of pharmacists to manage antidepressant therapy		0.88	
High pharmacy management expectations of pharmacists to manage antidepressant therapy		0.77	
Patients with depression want and/or seek support from pharmacists		0.73	

[a]$N = 119$.
[b]Principal Component Analysis was performed using varimax rotation. Only components with eigenvalues greater than 1 are included. Only coefficients with value greater than 0.35 are listed.

Correlation Matrices for Independent Variables

Before conducting the multivariate analyses, the possibility of multicollinearity was examined. Collinear is the term used to describe the relationship between two independent variables while multicollinearity is used to describe the relationship between more than two variables (Ross & Shannon, 2008). Therefore, one of the first indications of collinearity is the presence of a high correlation between two independent variables (Ross and Shannon, 2008). There is no established cut off that identifies acceptable and unacceptable correlation coefficients for indicating a possible problem with multicollinearity. For example, some researchers have used a correlation coefficient of 0.70 while others have selected a correlation coefficient of 0.80 or greater to indicate the possibility of multicollinearity (Pedhazur, 1997; Mertler & Vannatta, 2005). Hair and colleagues (1998) have suggested using a correlation coefficient of 0.90 or above as an indicator of multicollinearity (Hair, Anderson, Tatham, & Black, 1998).

Zero-order Pearson correlation matrices for independent variables in the multivariate models predicting engagement in antidepressant counseling are displayed in Table F-7. Examination of Table F-7 reveals that no pairwise correlation coefficients among potential predictor variables were greater than 0.35. Even though several associations between the potential predictor variables were statistically significant, all of them were weak associations. Most correlation coefficients were lower than 0.30, with two exceptions. Control/cure of illness and control/cure by health care provider had a correlation coefficient of 0.35, and organizational influences and self-efficacy had a correlation coefficient of 0.34, both of which were considered to be of low strength and not indicative of problems with multicollinearity.

Table F-7
Correlation Matrix for Variables Employed in Multivariate Models Predicting Pharmacist Engagement in Antidepressant Counseling[a]

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
(1) Consequences								
(2) Control/Cure of Illness	.04							
(3) Control/Cure by HCP	.13	.34**						
(4) Episodic Timeline	.19*	.06	.06					
(5) Chronic Timeline	.13	.02	-.19*	.06				
(6) Self Efficacy	.24**	.25**	.21*	.20*	-.04			
(7) Organizational Influences	.08	.19*	.14	-.11	.04	.35**		
(8) Environmental Influences	.10	-.05	.12	-.19*	.15	.14	.29**	

[a]$N = 119$.
[b]*$p < 0.05$, **$p < 0.01$.

Appendix G

Missing Data Handling

Item statistics were examined to determine the best strategy to be used for handling missing values within the data set. If the means of individual items that comprise the same scale are similar, the per-item mean of that scale can be used to replace the missing value of any scale item. If however item means differ considerably from one another, the mean for each individual item should be used (Mertler & Vannatta, 2005). Tables G-1 and G-2 summarize item statistics and number of missing values for each individual item in the scales specific to illness perceptions of depression and self-efficacy, organizational influences and environmental influences, respectively.

Examination of Table G-1 suggests that means of some individual items included the same scale were quite different from one another. For example, the means of items in the control/cure of illness (CCILL) scale ranged from a low of 2.98 to a high of 4.03. Similarly, Table G-2 suggests that means of some individual items included in the same scale were quite different from one another. For example, item means of the organizational influences (ORGINF) scale ranged from 2.72 to 3.48. Due to these differences in the item means for items comprising the same scale, the decision was made to use the mean of individual items to replace missing values.

Tables G-1 and G-2 display the number of missing values for each individual item. The highest number of missing values for any item was two out of the total of 119 respondents

Table G-1
Item Statistics for Illness Perceptions of Depression Study Scales[a]

Items	Mean (*SD*)	Number Missing
Consequences Scale (CONSEQ)	3.84 (0.44)	
Their depression is a serious condition	4.32 (0.57)	1
Their depression has had major consequences on their life	4.29 (0.57)	2
Their depression has become easier for them to live with	3.02 (0.93)	2
Their depression does not have much effect on their life	4.23 (0.62)	2
Their depression has strongly affected how others see them	3.68 (0.82)	2
Their depression has strong economic and financial consequences for them	3.80 (0.71)	2
Their depression is debilitating	3.56 (0.88)	1
Control/Cure Illness Scale (CCILL)	3.52 (0.44)	
Their depression will improve in time	3.03 (0.81)	1
There is a lot they can do to control their symptoms	3.59 (0.88)	1
There is little that can be done to improve their depression	4.03 (0.69)	1
Their treatment will be effective in curing their depression	2.98 (0.93)	2
What they do determines whether their depression gets better or worse	3.96 (0.74)	2
Control/Cure Illness by HCP Scale (CCHCP)	2.98 (0.77)	
There is a lot I can do to control their symptoms	3.12 (0.88)	1
What I do determines whether their depression gets better or worse	2.83 (0.83)	1
Chronic Timeline Scale (TIMECH)	2.97 (0.74)	
Their depression is likely to be permanent rather than temporary	2.78 (0.88)	1
Their depression will last for a long time	3.17 (0.79)	1
Episodic Timeline Scale (TIMEEP)	4.15 (0.42)	
Their depression may change from time to time	4.14 (0.47)	1
There will be periods of depression and periods of improvement	4.18 (0.50)	1

[a]*N* = 119.

Table G-2
Item Statistics for Study Scales[a]

Items	Mean (*SD*)	Number Missing
Self-Efficacy Scale (SELFEF)	3.84 (0.60)	1
SELFEF1	3.62 (0.85)	1
SELFEF2	4.01 (0.62)	1
SELFEF3	3.99 (0.63)	1
SELFEF4	3.78 (0.80)	1
Organizational Influences Scale (ORGINF)	3.14 (0.80)	1
ORGINF1	2.72 (1.15)	2
ORGINF2	3.48 (1.08)	1
ORGINF3	3.20 (1.00)	1
Environmental Influences Scale (ENVIRINF)	3.10 (0.64)	1
ENVIRINF1	3.37 (0.84)	1
ENVIRINF2	2.83 (1.02)	1
ENVIRINF3	2.70 (0.95)	1
ENVIRINF4	3.50 (0.82)	1

[a]*N* = 119.

(1.7%). Missing values were handled systematically. Due to the relatively low number of missing values for each overall scale and for each individual item, item means were used to substitute for the missing value of each item.