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Correlates of attitudes toward behavioral health services among older primary care patients

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Correlates of Attitudes Toward Behavioral Health Services
Among Older Primary Care Patients

by

Nancy Bridger Lynn

A dissertation submitted in partial fulfillment
of the requirements for the degree of
Doctor of Philosophy
School of Aging Studies
College of Behavioral and Community Sciences
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Dedication

I would like to dedicate this dissertation to my family. Without them, none of this would have been possible. To my wonderful husband Jayson who has supported me in everything I have chosen to do, no matter what: I thank you for your encouragement in tough times, your willingness to read and re-read drafts, and listen to countless numbers of practice presentations.

To my daughter, Teagan, who was born amid this dissertation madness: She makes me want to be the best person I can possibly be. One day I'll tell her how I wrote drafts while feeding her and I ran regression models while she napped.

To my Mom, sister, brother-in-law, and nephews: Thank you all for of your support. I couldn't have done it without you!

This dissertation is also dedicated to the memory of my father. He passed away after a long battle with cancer soon after I passed my qualifying exams. I hope he knew that everything I do in my life is an effort to be the kind of person he wanted me to be. He was a special man and I hope I've made him proud.

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Correlates of Attitudes Toward Behavioral Health Services Among Older Primary Care Patients

Nancy Lynn

ABSTRACT

Research suggests that more than ten percent of older adults experience behavioral health problems (including mental health problems and/or substance abuse). However, very few actually receive care from a behavioral health care provider or even a primary care provider. One major barrier to accessing and receiving care is the feeling of perceived stigma commonly associated with behavioral health problems. The present study examined the relationships among attitudinal variables, feelings of stigma, and behavioral health outcomes over time in an elderly population with the secondary analysis of data collected for a previously implemented research study, the Primary Care Research in Substance Abuse and Mental Health for Elderly (PRISM-E) study. The PRISM-E research project was a multisite, randomized, comparative trial examining two models of care for persons aged 65 and older with symptoms of depression, anxiety, and/or at-risk drinking. A total of 2,022 participants over the age of 65 were included in the database. Over half of the participants indicated that they had some feelings of stigma associated with mental health and substance abuse issues. An examination of the measure used in the PRISM-E study to measure stigma revealed the presence of two factors, or components, of stigma that we labeled Perceived Stigma and Comfort Level. Statistical analyses of the data demonstrated that feelings of stigma are not constant and can indeed

change over time. However, in this sample, perceived stigma was not related to behavioral health outcomes, such as a reduction in symptoms of depression, anxiety, and/or at-risk drinking. Limitations of this study include the possibility that the sample may be biased due to the fact that all participants were under the care of a primary care provider and all agreed to enter treatment for their behavioral health problem.

Implications of the findings are that it is possible to influence feelings of stigma and previous research has demonstrated that lower levels of feelings of stigma in older adults as well as other age groups may lead to improvements in accessing and engaging in behavioral health treatment.

Chapter One

Introduction

The proportion of older adults over the age of 65 has increased over the past century and is predicted to continue growing at high rates. Both the lengthening life expectancies and the aging of the large numbers of the Baby Boom generation contribute to this dramatic increase (USDHHS, 1999). As the number of older adults in this country grows, one would expect a proportional amount of growth in the number of older adults seeking behavioral health services (mental health services and/or substance abuse treatment services). However, only a relatively small proportion of older adults with behavioral health disorders currently has any contact with service providers (Cole, 2002). Karlin and Duffy (2004) state that the “mental health needs of the nation’s geriatric populations have been significantly neglected” (p. 509).

Many barriers prevent those older adults in need from seeking and receiving health care (Fitzpatrick, Powe, Cooper, Ives, & Robbins, 2004). The Surgeon General’s Report on Mental Health (USDHHS, 1999) identifies stigma as the most formidable barrier to the receipt of mental health services. In 1963, Goffman defined stigma as an “attribute that is deeply discrediting” and reduces the bearer “from a whole and usual person to a tainted, discounted one” (as cited in Bambauer & Prigerson, 2006). Perceived or self stigma is the belief that most people will devalue and discriminate against

individuals who use behavioral health services or who have a behavioral health disorder (Link, Cullen, Struening, Shrout, & Dohrenwend, 1989).

Perceived stigma can be a problem for individuals of all ages with behavioral health problems. Research focused on older adults has found that older patients are often reluctant to discuss their behavioral health problems with a health care provider. As with individuals in other age groups, some older adults may reject the diagnosis of depression or another behavioral health disorder due to the stigma attached to it. A psychiatric diagnosis may spark concerns of a potential loss of independence and fears of being institutionalized (Wagenaar, Mickus, Gaumer, & Colenda, 2002). Older males seem particularly affected by the stigma associated with a behavioral health diagnosis, which is cause for concern because older males have the highest rate of completed suicide (Reynolds & Kupfer, 1999). The problem of stigma not only affects the identification of behavioral problems in older adults, but treatment adherence as well. Greater perceived stigma toward individuals with behavioral health problems is associated with a greater likelihood of treatment discontinuation (Sirey et al., 2001).

This study will explore the relationships among attitudinal variables including feelings of stigma, and behavioral health outcomes over time by analyzing data collected for a previously implemented research study, the Primary Care Research in Substance Abuse and Mental Health for Elderly (PRISM-E) study. This research project was a multisite, randomized, comparative trial examining two models of care for persons aged 65 and older with symptoms of depression, anxiety, and at-risk drinking. PRISM-E was the largest randomized study of behavioral health care among the elderly to date. The overall goal of the study was to compare the effects of integrated behavioral health care

models and enhanced referral care models on engagement, participation, patient clinical outcomes, and cost-effectiveness for the target conditions of depression, anxiety, and at-risk drinking in older adults (Levkoff et al., 2004). The PRISM-E dataset will be explored in this dissertation in an effort to examine the relationships among perceptions of stigma and behavioral health outcomes in older adults.

Prevalence of Mental Disorders in Older Adults

Evidence suggests that behavioral health problems are relatively common among the elderly population. However, few, if any, large-scale epidemiological studies have focused specifically on the prevalence of behavioral health issues in this population. To understand the prevalence of behavioral health problems among older adult populations, we must examine the data that are available from epidemiological studies examining the behavioral health issues in populations across the lifespan. Some of these studies provide much needed information about the rates of these disorders among an elderly population.

The National Institute of Mental Health (NIMH) Epidemiologic Catchment Area (ECA) Program was developed over two decades ago to determine the prevalence and incidence of specific disorders in community and institutional samples. This seminal study provided much needed data on the prevalence of mental disorders in all ages, including those 65 and older. Using the Diagnostic Interview Schedule (DIS) as the diagnostic tool, results indicated that the one-month prevalence of any disorder among non-institutionalized adults 65 and over was 12.3%, lower than rates seen in their younger counterparts. The most prevalent diagnostic category in this age group was anxiety disorders (5.5%; Regier et al., 1988); this category includes disorders such as phobias, obsessive-compulsive disorder, and posttraumatic stress disorder. Phobic

disorders were the most common anxiety disorder, with a 1-month prevalence rate of 4.8%. A one-month prevalence rate of 0.7% was found for major depression. Some gender differences were found as well, with older women experiencing mental health disorders at higher rates than older men (13.6% vs. 10.5%). Alcohol and drug disorders, however, were more common in men than in women. A one-month prevalence rate for alcohol disorders was estimated to be 0.9% in this population.

Since the ECA was completed, a number of epidemiological studies have been conducted and the results provide more information about the extent of behavioral health problems in this population. Many of these studies have focused on specific disorders, such as anxiety, mood, or substance use disorders. Data from several of the studies are presented below. However, Hybels and Blazer (2004) caution that these epidemiological trends for older adults must be interpreted with the understanding of the importance of cohort effects. Cohorts born during the same general time experienced the same historical events. These events shape their behavior and attitudes throughout their lives, resulting in cohort effects. For example, cohorts growing up during the Prohibition Era in the 1920s may have developed negative values about alcohol use that have biased the views and practices of older adults currently in their 90s and older (Atkinson, Ganzini, & Bernstein, 1992). For this reason, the prevalence rates for behavioral disorders may not remain stable over time. In fact, as the Baby Boom generation ages, the prevalence of some disorders, specifically alcohol and substance use disorders, may increase (Hybels & Blazer, 2004).

Mood disorders. Depression and depressive symptoms are associated with reduced quality of life, decreased functioning and independence, premature death, and

suicide (Lebowitz et al., 1997). In a recent study, Chachamovich, Fleck, Laidlaw, and Power (2008) found that even relatively minor levels of depression (subsyndromal levels) are associated with decreases in several domains of quality of life among older adults. In a four-year prospective study of HMO enrollees, the percentage of older adults with depressive symptoms increased from 14% at baseline to 18% at the four-year follow-up (Unutzer et al., 1997), a significant increase suggesting that depressive symptoms increase as we age. Older adults also experience other mood disorders such as dysthymia, bipolar disorder, and hypomania, but these disorders generally occur at a much lower rate than major depression. Using criteria from the American Psychiatric Association's Diagnostic and Statistical Manual for Mental Disorders (DSM; APA, 1994), Gurland and colleagues (Gurland, Cross, & Katz, 1996) found one-year prevalence rates of major depression to be about 5% in older adults. Depression may be more evident among subsamples of the general population. Among a sample of frail, low-income, community-dwelling seniors, Rogers and Barusch (2000) found 29% exhibiting depressive symptomatology. The prevalence of diagnosable depression among nursing home residents is also substantial (Smyer & Qualls, 2004) and has been estimated to be as high as 22% (Burrows, Satlin, Salzman, Nobel, & Lipsitz, 1995).

While the prevalence of major depression declines with age, depressive symptoms increase over time. This trend is evident when comparing DSM-based measures for diagnosis to symptom-based assessments. However, diagnosing older adults with depression can be more difficult than younger adults. Older adults with depression often report different symptoms than those commonly seen in younger adults. Older adults are less likely to report feelings of dysphoria, which is often a classic symptom of depression

in younger adults (USDHHS, 1999). Older adults with depressive symptoms may complain of physical symptoms such as unexplained pain, headache, fatigue, loss of appetite, or gastrointestinal symptoms (Charney et al., 2003; Lebowitz et al, 1997). Because symptoms reported by older adults are often somatic in nature, depression may be mistakenly diagnosed as physical illnesses, such as atherosclerosis, Alzheimer's disease, or simply normal aging (USDHHS, 1999), possibly leading to lower estimates of behavioral health problems in this population.

Anxiety disorders. The category of anxiety disorders includes generalized anxiety disorder, phobic disorders, panic disorder, obsessive-compulsive disorder, and post-traumatic stress disorder. In a community-based study, one-year prevalence rates indicate that about 11.4% of adults 55 or older meet criteria for an anxiety disorder (Flint, 1994). Phobic disorders are the most common type of anxiety disorder found in older adults (Regier et al., 1988). In a study of Canadian community-dwelling older adults, Bland, Newman, and Orn (1988) found a prevalence rate of 3.0% for phobic disorders. Generalized anxiety disorder (GAD) was not assessed in the ECA study, but one ECA site did include assessments for GAD. Blazer, Hughes, and George reported that 2.2% of individuals over the age of 65 met criteria for GAD in the year prior to the assessment interview (as cited in Hybels & Blazer, 2004).

Similar to trends in depression, symptoms of anxiety may be more common than diagnosable anxiety disorders as age increases. Worrying, which usually does not meet the criteria for an anxiety disorder in itself, can be troublesome for older adults. In a study of Swedish community-dwelling older adults aged 78 and older, Forsell and Winblad

(1998) found that nearly one-quarter of the sample experienced feelings of excessive worry and anxiety.

Alcohol use disorders. One challenge for researchers in this field is that DSM diagnostic criteria for alcohol use disorders were initially developed for use with young and middle-aged adults, not older adults. The DSM includes criteria such as problems at work and problems with family which may not apply to older adults since many are retired from the workplace and many are widowed and do not live with or have regular contact with family. More recently, several screening and diagnostic tools have been developed and validated for use with older adults, making it possible to gather more accurate epidemiological data.

Liberto, Oslin, and Ruskin (1992) examined the prevalence of heavy drinking (defined here as 12 to 21 alcoholic drinks per week) in older adults and found it to be between 3% and 9%. Data from the ECA study using one-month prevalence rates of alcohol abuse and dependence were much lower (0.9%; Regier et al., 1988). Gender differences in drinking patterns are also evident. In an analysis of three nationally representative studies, Breslow, Faden, and Smothers (2003) discovered prevalence rates of moderate drinking ranged from 27% to 38% for males and 21% to 32% for females. For heavier drinking, prevalence rates were around 9% for males and 2% for females.

Often, mental illnesses and substance abuse disorders co-occur in the same individual. A study by Holroyd and Duryee (1997) found that 9% of older clients receiving treatment for a mental health disorder through an outpatient psychiatric facility also had a diagnosable dependence on alcohol. Recent estimates of persons with mental illness and alcohol abuse or dependence are greater than 20%. Alcohol use disorders can

cause or exacerbate the symptoms of many mental disorders, including personality disorders (Westreich, 2005).

Prevalence rates for at risk alcohol use are expected to rise as the Baby Boom generation ages, since this group has heavier drinking patterns (and substance abuse rates) than the current group of older adults (Patterson & Jeste, 1999). Research has shown that although alcohol consumption generally decrease with age, problem drinkers often continue the same drinking patterns as they age (Schonfeld et al., 2000).

Additionally, the effects of alcohol on the individual often changes with aging leading to an increase in the dangers of drinking. Although a recent study found potential health benefits to moderate alcohol use among women (two or less drinks a day), other variables must be taken into account when interpreting these findings (Balsa, Homer, Fleming, & French, 2008). Alcohol use in conjunction with certain medications, changes in body composition, and the presence of comorbid medical conditions could all potentially magnify the effects of the alcohol, in turn possibly leading to increased risk of accidents and falls.

An Underserved Population

Recent research has estimated that as many as one in four older adults has a significant mental disorder (Bartels, 2003). However, this number may be underestimated due to an underidentification of older adults with behavioral health disorders. Although their numbers are growing, older adults are less likely than younger adults to receive mental health treatment of any type (Swartz et al., 1998). According to the Surgeon General (USDHHS, 1999), less than half of those older adults with a mental disorder will receive treatment in their lifetime. When examining data from the nationally

representative Healthcare for Communities (HCC) household survey, Klap and colleagues (Klap, Unroe, & Unutzer, 2003) found results similar to the ECA study in that only half of older adults with a probable mental disorder had received any type of treatment. Further, older adults were significantly less likely to receive specialty mental health treatment (i.e. outpatient specialty mental health services, emergency room, or counseling visits) than their younger counterparts. Stated in another context, Cole and Yaffe write that “among 27 elderly per thousand who have moderate-severe depression, 22 consult a family physician who detects the disorder in 5.3; of these, only 2.8 are referred to a psychiatric service, let alone a geriatric psychiatry service” (p. 3; as cited in Cole, 2002).

If an older adult is identified in a primary care setting as having a behavioral health disorder, they are more likely to receive a psychotropic medication without a recordable diagnosis than younger individuals (Larson, Lyons, Hohmann, & Beardsley, 1991). In addition, having a behavioral health disorder is related to a greater risk of the prescription of inappropriate medications in older adults, especially benzodiazepines (Stuck et al., 1994). These findings underscore the importance of encouraging and empowering older adults to access and engage in specialized behavioral health treatment.

Older adults residing in nursing homes are at even greater risk of being underserved. In an examination of Medicare claims data, Shea and colleagues (Shea, Russo, & Smyer, 2000) found that 80% of nursing facility residents with some indication of a mental illness do not receive mental health visits from a psychiatrist, clinical psychologist, or licensed clinical social worker. In addition, nearly three-quarters of all nursing facility residents had no visits with any health care provider, including a primary

care physician. When a health care provider did visit, the visits were infrequent, with less than 10% of residents with a mental illness receiving a monthly visit. Nursing facility residents living in rural areas have been identified as an especially underserved population, with even lower rates of seeing any provider, much less a behavioral health specialist.

The factors contributing to older adults with behavioral health needs being underidentified by the health care system are complex. Factors can be categorized into three main groups: provider factors, service delivery factors, and personal factors. These factors will be discussed below.

Provider factors. Although most older adults report that they would use some type of a psychological service if needed, few actually do (Areal, Alvidrez, Barrera, Robinson, & Hicks, 2002). In reality, older adults are less likely than middle-aged adults to consult with a specialty mental health care provider or any health care provider about their depression (Crabb & Hunsley, 2006). If they do seek treatment, older adults prefer to receive care from their primary care physicians (Dupree, Watson, & Schneider, 2005; Gallo, Rabins, & Illife, 1997; Mickus & Colenda, 2000). Primary care offers the potential advantages of proximity, affordability, convenience, and coordination of care for behavioral and physical disorders, given that comorbidity is typical. Unfortunately, this coordination rarely happens. According to the President's New Freedom Commission on Mental Health (2003), mental health disorders "often go undiagnosed, untreated, or under-treated in primary care (p. 59). Some physicians harbor their own beliefs that behavioral health disorders simply do not occur in older adults or that depression is a normal part of the aging process. Others may feel that it is more important to treat co-

morbid physical health illnesses than mental health illnesses (Unutzer et al, 2001). In reality, many primary care physicians receive little or no training in mental health issues or geriatrics therefore may be unqualified to appropriately identify and treat behavioral health problems in their patients.

Often, primary care physicians do not screen patients, including older adults, for behavioral health problems. Klap and colleagues (2003) reported that only 15% of older adults in the HCC dataset reported being asked by their primary care physicians about symptoms of anxiety, the most common behavioral health disorder in older adults. Only 1% of older adults indicated that their physician had referred them to a mental health specialist in the past year for evaluation or treatment. The consequences of this inaction can be very serious; Conwell, Rotenberg, and Caine (1990) conducted an analysis of suicides and found that 75% of the older adult suicide completers had visited their primary care physician in the month preceding their deaths.

Service delivery factors. The behavioral health system in the United States encompasses a variety of providers including psychologists, psychiatrists, mental health counselors, and social workers. Similarly, services are offered in varied settings such as mental health centers and private practice, and less frequently in nursing homes, primary care, criminal justice, and aging services. The service system is fragmented and difficult to navigate (Bartels, 2003). In many rural areas, behavioral health services may not be available. Limited access to transportation in all areas prevents many older from regularly accessing needed services (Arcury et al., 2005).

The current health care system lacks preparedness for the projected influx of future older adults in need of behavioral health services. Borson and colleagues (Borson,

Bartels, Colenda, Gottlieb, & Meyers, 2001) label the behavioral health service system as vertically and horizontally fragmented. Vertical fragmentation refers to situations when multiple service systems are involved in providing care, such as specialty mental health, primary medical care, aging services, and substance abuse. Often, these multiple service sectors do not collaborate on care leading to a fragmentation of services. This is often the case for those older adults with comorbid conditions, meaning the coexistence of two or more conditions, often mental health and substance abuse. Borson and colleagues also use the term vertically fragmented to describe the lack of or disruption of continuity of care over time experienced by many older adults.

Personal factors. When compared with younger adults, older adults often exhibit atypical symptoms of mental disorders. Older adults with behavioral health issues often present with somatic complaints, such as fatigue and pain, making it difficult to make an appropriate diagnosis. In some cases, older adults may exhibit symptoms of a mental disorder that do not meet the full DSM criteria for that disorder (USDHHS, 1999). Although the person's symptoms do not meet criteria, it is possible even probable, that their quality of life is being negatively affected by the symptoms (Hybels & Blazer, 2004). Subsyndromal symptoms of depression have been associated with significant disability, reduced quality of life, and suicidal ideation (Chachamovich et al., 2008; Chopra et al., 2005).

Older adults often have comorbid physical health problems along with their behavioral health problems. In some cases, the somatic complaints will mimic or mask the behavioral health problem, making diagnosis difficult (USDHHS, 1999). Charney and colleagues (2003) state that depression should be considered of hospitalized older adults

with myocardial infarction, congestive heart failure, stroke, hip fracture, cancer, or alcohol abuse if they exhibit delayed recovery, poor compliance with rehabilitation programs, or treatment refusal. Other conditions which mimic or mask psychiatric symptoms include thyroid dysfunction, mitral valve prolapse, epilepsy, multiple sclerosis, hypoglycemia, and brain tumors (Segal, Coolidge, & Hersen, 1998). When depression co-occurs with physical illnesses, treatment adherence is reduced and chances for recovery from the physical illness are lessened (Goldman, Nielsen, & Champion, 1999).

Due to an increase in chronic medical conditions in older age, older adults consume a disproportionate amount of prescribed and over-the-counter medications. These medications may mask symptoms or be the underlying cause of the symptoms (Hybels & Blazer, 2004). With increased medication use, older adults are exposed to a greater chance of adverse reactions and harmful drug interactions (Segal et al., 1998).

In some cases, older adults themselves may feel that illnesses such as depression and anxiety are part of the natural course of growing older. Some older adults mistakenly believe that their symptoms are a part of their somatic illnesses. Klap and colleagues (2003) found that older adults with a probable mental health disorder were less likely than younger or middle-aged adults to perceive a need for mental health services (28% vs. 49% or 43%, respectively). Others, due to the stigmatization of behavioral health problems, may deny or minimize symptoms or rationalize them in an effort to avoid being labeled as having a mental illness (Goldman et al., 1999).

Stigma and Behavioral Health Service Use

The stigma surrounding behavioral health care has been widely studied in younger populations. Less is known about the impact of stigma on the health care

utilization of older adults. The topic of stigma and the negative outcomes associated with it has surfaced in the past decade. The Surgeon General's Report on mental health states that stigma is the most formidable obstacle to further progress in the field of mental illness (USDHHS, 1999). The President's New Freedom Commission (2003) has recommended a national campaign to reduce or eliminate the stigma surrounding behavioral health care, especially in suicide prevention. In 2003, the World Health Organization (WHO) and the Old Age Psychiatry section of the World Psychiatric Association (WPA) jointly distributed a technical consensus paper on the problem of stigma and discrimination against older adults with mental disorders and calling for further research in the area (Graham et al., 2003). In addition, the U.S. Substance Abuse and Mental Health Services Administration (SAMHSA) has developed an on-line resource center dedicated to combating stigma and discrimination associated with mental illness and substance abuse issues (www.stopstigma.samhsa.gov).

Corrigan (2004) defines two types of stigma that overlap and interact: public stigma and self-stigma. Public stigma is "what a naïve public does to the stigmatized group" and self-stigma is "what members of a stigmatized group may do to themselves if they internalize the public stigma" (p. 616). Barney, Griffiths, Jorm, and Christensen (2006) describe another type of stigma similar to self-stigma, perceived stigma, as the belief that other people hold stigmatizing ideas; that others will respond negatively to them if they seek help. Link and colleagues (Link, Struening, Neese-Todd, Asmussen, & Phelan, 2002) posit that people develop conceptions of mental illness early on in life and form expectations as to how they and the rest of society would react to a person with mental illness. When a person goes on to develop a mental illness, they may struggle with

reconciling their beliefs about people with mental illness and fear how society will react to them. This may lead to persons with mental illnesses feeling set apart and different from others and ashamed. Possible coping mechanisms include secrecy, distancing, and withdrawal from others. Perceived stigma has been closely associated with self-esteem, feelings of shame, and depressive symptoms. This association indicates that feelings of stigma and ways of coping with feelings of stigma may be able to change over time (Link, Struening, Neese-Todd, Asmussen, & Phelan, 2001; 2002).

Stigma influences behavioral health services utilization in a number of ways. Older patients are often reluctant to discuss their behavioral health problems with a health care provider due to the stigma surrounding such problems. Concerns about having a mental health diagnosis substantially decrease the likelihood of service use (Bambauer & Prigerson, 2006). Barney and colleagues (2006) surveyed adults and found that self-stigma and perceived stigma are common and both types decrease the likelihood of seeking help from any professional source, including general practitioners, counselors, psychologists, and psychiatrists. Respondents reported greater embarrassment associated with visiting mental health professionals, especially psychiatrists. One-fifth of respondents expected to receive negative responses when they did seek help, especially from general practitioners. In another study, Cooper, Corrigan, and Watson (2003) found that individuals were less likely to consider seeking care in the future if they perceived people with mental illness as responsible for their disorders, reacted to them angrily because of this attribution, and withheld pity and helping behaviors. As would be expected, those who felt favorably toward seeking help from a professional are more likely to do so (Komiti, Judd, & Jackson, 2006).

Older adults living in rural communities are also affected by the stigma associated with behavioral health problems, perhaps more so than those living in suburban and rural areas. In a survey of rural residents, respondents often felt that people in their communities would gossip about a person with mental illness and would be wary of a person who had been hospitalized for a mental illness (Komiti et al., 2006). Paradoxically, respondents also felt that their neighbors were more supportive and caring of a person with a behavioral health illness than those living in urban communities. Many individuals living in rural communities preferred informal assistance to formal assistance and viewed formal mental health care as a last resort, only to be used after trying to work out their problems themselves. A study of at-risk drinkers living in rural communities found that respondents felt a lack of privacy when seeking assistance from primary care providers. This is concerning because a lack of specialty behavioral health providers in many rural locations leaves primary care the only option for receiving needed behavioral health care (Fortney et al., 2004).

Ethnicity and race also play an important role in service utilization and the influence of stigma. Although there is wide variation among ethnicities, American Indian/Alaskan Natives have higher rates of mental health problems and reported unmet needs when compared to Whites. African American, Asian, Mexican, Central and South American, and other Hispanic-Latino groups generally have among the lowest rates of mental health problems in comparison to other ethnic groups (Harris, Edlund, & Larson, 2005). Many factors play a part in the relationship between health care utilization and ethnicity, such as education, finances, health insurance, and mistrust of the service system. Some evidence suggests that non-Caucasians are less likely to think that the

medical system is a useful source of mental health treatment when compared to Caucasians (Corrigan, 2004). However, very little research has been conducted examining the influence of stigma on the behavioral health decisions of ethnic minorities, especially elderly minorities, in the United States.

While some older adults may be willing to seek services, many are unaware of where to find behavioral health service providers. In a survey of older and younger adults, older adults described themselves as less knowledgeable about mental health care and appropriate treatment than younger adults. Most older adults surveyed wished they had a better understanding of when to see a mental health professional and felt that adequate access to mental health care was very important (Robb, Haley, Becker, Polivka, & Chwa, 2003). However, the acknowledgement of the importance of psychological treatments such as medication and psychotherapy does not predict use of mental health services. Among bereaved older adults, receptivity to professional assistance for mental health issues does not necessarily influence the rate of actually accessing these services. Oftentimes, while older adults accept the usefulness of these services in general, their personal need for professional assistance may be perceived as a threat to their ability to live independently (Bambauer & Prigerson, 2006). Older adults have been found to be more likely to report feeling less receptive to professional mental health services and were more concerned with possible family reactions than those in other age groups (Leaf, Bruce, Tischler, & Holzer, 1987).

The stigma associated with behavioral health problems not only affects a person's decision to seek help, it may influence an individual's decision to continue treatment. A review of 34 studies found that more than 40% of people receiving antipsychotic

medication failed to adhere to prescribed regimens (Cramer & Rosenbeck, 1998). Similar attrition is evident in psychosocial treatments as well (Corrigan, 2004). In a study by Sirey and colleagues (2001), perceived stigma was found to predict early treatment discontinuation in older adults. Younger patients reported greater levels of perceived stigma but it did not influence their treatment participation decisions as heavily as it did for older adults.

In 2005, the Substance Abuse and Mental Health Services Administration (SAMHSA) issued the report “Mentally Healthy Aging: A Report on Overcoming Stigma for Older Americans” (USDHHS, 2005). Written by leading researchers in the field, the report recommends strategies to overcoming the barriers to reduce stigma associated with mental illness. The report suggests (1) empowering and educating older Americans with mental illnesses, and (2) educating the public on mental health and aging.

The 2003 consensus paper written by WHO and the WPA make a number of suggestions for reducing stigma and discrimination against older adults with mental illnesses including creating supportive environments and appropriate health and social care systems, place the mental health of older adults on the public agenda, and encourage more research. The authors of this report suggest that government policy makers as well as non-governmental organizations have major parts to play in reducing stigma against people with mental illnesses (Graham et al., 2003).

The SAMHSA and WHO/WPO reports mostly focus on changing public stigma, not on how to improve self or perceived stigma. Link and colleagues (2002) developed an intervention targeting the coping strategies of people with mental illnesses. The authors hypothesized that by modifying coping strategies of dealing with perceived stigma, self-

esteem and depressive symptoms would also improve. Results of their study did not support this hypothesis. However, this is one of the only studies to attempt to change perceptions of stigma within a person with mental illness rather than changing the beliefs of society at large.

Measuring stigma. Several measures of perceived-stigma exist in the mental health literature. In a review of the literature, Link and colleagues (Link, Yang, Phelan, & Collins, 2004) categorize measures applicable to patients and consumers of mental health services as falling into the following categories: measures examining mental health consumers' experience of stigma, measures for consumers associated with modified labeling theory, measures of rejection and perceptions of rejection, measures of coping orientations, and measures of stigma-related feelings. Link and colleagues caution against using self-report measures of stigma due to measures of neuroticism being related to the perception of being stigmatized. For example, "a person who is unemployed, isolated, or beset by low self-esteem may seek to explain his or her disadvantaged status by invoking stigma. In such a scenario, levels of measured stigma do not cause bad outcomes but are instead consequences of those outcomes" (p. 525). The research conducted in this area by Link and colleagues demonstrates the complexities and variations within the stigma construct and the challenges inherent in its measurement.

Stigma is a complex construct; many instruments exist which attempt to measure its various facets. Many measures of perceived stigma attempt to quantify the experience of the person with mental illness. One such measure is the Stigma Coping Scale (Link, Struening, Cullen, Shrout, & Dohrenwend, 1989), which assesses beliefs about devaluation of and discrimination toward individuals with mental illnesses as reported by

a person with mental illness (Sirey et al., 2001). In a review of measuring mental illness stigma, Link and colleagues (2004) discuss several measures of stigma appropriate for patients/consumers, including his own work in developing measures of coping techniques (secrecy, withdrawal, and distancing), and stigma-related feelings (misunderstood and different/ashamed). Included in the review is Wahl's (1999) Mental Health Consumer Experience of Stigma, which includes questions about stigma experience and discrimination. The Self-Stigma of Seeking Help Scale (Vogel, Wade, & Haake, 2006) consists of ten items such as "I would feel inadequate if I went to a therapist for psychological help." The newly developed instrument, Depression Self-Stigma Scale (Kanter, Rusch, & Brondino, 2008), measures general self-stigma, secrecy, public stigma, treatment, and stigmatizing experiences.

Although many measures of perceived stigma exist in the literature base, few, if any, have been developed specifically for use with older adults (with the exception of the HIV/AIDS field). One measure developed for older adults focuses on bereaved older adults, not older adults in general (Bambauer & Prigerson, 2006). In light of demonstrated findings that older adults in need of behavioral health services are acutely affected by perceived stigma, measures developed specifically for this population would be a huge step toward understanding how to combat the problem of perceived stigma for older adults.

Facilitators to Receiving Services

Much research has been conducted to identify barriers to receiving treatment. In addition, researchers have attempted to identify which personal factors significantly predict seeking treatment for behavioral health problems. Being female, not being

married, and having higher levels of education are all predictors of seeking and receiving treatment (Crabb & Hunsley, 2006). Additionally, having a driver's license and access to transportation are also associated with greater numbers of health care visits (Arcury et al., 2005).

Recently, increasing numbers of “carve-in” or co-located behavioral health services are being offered to patients. “Carve-in” services integrate behavioral health care into the system of general health care services (USDHHS, 1999). As Speer and Schneider (2003) state, when a primary care physician is able to take a patient down the hall to meet with a counselor, the physician is “implicitly vouching for the mental health provider, providing personal reassurance and support to the patient, and demonstrating to the patient the mutually respectful relationship between the two providers” (p. 95). Recent studies have found less perceived stigma, improved communication, and improved convenience for patients receiving care from behavioral health professionals co-located within the offices of primary care providers (Williams, Shore, & Foy, 2006).

Models that integrate mental health treatment into primary care have had some success engaging and treating older adults. Because older adults tend to seek mental health treatment in primary care (Kaplan, Adamek, & Calderon, 1999), Katon and colleagues introduced a structured depression treatment program into the primary care setting. Patients participating in the program displayed better medication adherence, better satisfaction with care, and a greater decrease in severity of major depression (Katon, Von Korff, Lin, Bush, & Ormel, 1997). Another study examining integrated service delivery found a declining trend in institutionalization, lower rates of caregiver

burden, and lower rates of deterioration among the group receiving integrated care (Tourigny, Durand, Bonin, Hebert, & Rochette, 2004).

In the PRISM-E study, Bartels and colleagues (2004) co-located integrated mental health and substance abuse services in a primary care setting. When compared with an enhanced referral model, patients using the integrated model had a greater rate of treatment engagement, greater mean number of visits, and a greater rate of return for subsequent visits. The integrated model was also associated with a greater proportion of first visits occurring within two weeks from randomization compared with the referral group. This integrated model was also particularly effective at engaging individuals with at-risk alcohol use and those with active suicidal ideation. In another study of integrated services, clinicians reported preferring the integrated care rather than the referral system for older adults with psychiatric disturbances (Gallo et al., 2004).

The Impact of Behavioral Health Problems on Health Care Systems

As evidenced by the epidemiological studies discussed above, many older adults have behavioral health problems or are at risk for their development. The impact of these behavioral health problems are far reaching and are especially evident in the health care industry. Historically, the mental health service delivery system has been fragmented and ill equipped to accommodate the growing and various needs of older adults living in the community (Bartels, 2002; 2003). With the numbers of older adults growing at such a high rate, the entire health care system may need reform to be able to meet the needs of the elderly population in the U.S.

Mental disorders in older adults have been associated in research literature with higher health care costs (Katon, Lin, Russo, & Unutzer, 2003; Luber et al., 2001). In a

four-year prospective study of HMO Medicare enrollees, Unutzer and colleagues (1997) discovered that participants with significant depressive symptoms had higher health care costs (about 50% higher) than their non-depressed counterparts throughout the four years of the study, even after adjusting for age, gender, and chronic illness. The depressed group exhibited higher costs in all categories of medical care (i.e., inpatient/outpatient visits, laboratory tests, and emergency room visits). Only about 1% of the health care costs were from the specialty mental health or substance abuse sectors, indicating that if behavioral health care was being delivered, it was happening in primary care settings. This underutilization of appropriate behavioral health services contributes to the economic burden. Older adults who do not receive services or receive inappropriate services eventually need more expensive intensive treatment in the future. If behavioral health problems are identified early and managed properly with evidence-based treatment approaches, the economic burden of these disorders would be reduced (Wang, Simon, Kessler, 2003).

Older adults living in long-term care facilities have a high need for behavioral health services. In a study of Florida residents of assisted living facilities (ALFs), Becker, Stiles, and Schonfeld (2002) discovered that the proportion of residents receiving mental health care was greater than those older adults residing in the community. The implication of this is that community-dwelling older adults are underrepresented in the receipt of mental health treatment and/or that ALF residents exhibit a great need for mental health services. The ALF residents had greater mental health service expenditures, in some cases more than double, than community-dwelling older adults. The authors posit that “given the reported negative outcomes for the ALF population with mental health

needs, the effectiveness of the mental health services provided remains questionable” (p. 96).

Untreated behavioral health problems have been associated with overutilization of medical services and increased health care costs (Speer & Schneider, 2003). When a diagnosis of a behavioral disorder such as depression is missed by service providers, the search for physical explanations of symptoms causes unnecessary increases in medical utilization rates and expenditures (Goldman et al., 1999).

Conclusion

Research has consistently shown that older adults are in great need of behavioral health services, but very few are identified as having such needs and fewer still actually receive appropriate treatment. Anxiety, depression, and alcohol use disorders are not uncommon in older adults, although these disorders are not a part of normal aging. Successful treatment modalities do exist that have been specifically designed for use with older adults.

The reasons for this underidentification are many and varied. Factors associated with providers include erroneous beliefs that symptoms are a normal part of aging, a lack of training in gerontology and behavioral health, a tendency to focus on somatic complaints, and problems with diagnostic criteria. The fragmentation of the health care service system makes it difficult for many people, especially older adults, to navigate and access appropriate services. Often, it may be difficult for providers to identify symptoms of a behavioral health problem. Older adults may display atypical symptoms or may emphasize somatic complaints instead of behavioral health problems. Co-occurring disorders and certain medications also make the diagnosis of a behavioral health problem

difficult for the health care provider. Older adults may also be reluctant to seek out services due to limited transportation, financial barriers, or a whole host of other personal factors.

The stigma associated with mental illnesses is also a major obstacle to seeking and receiving appropriate care. The consequences of stigma are far-reaching. Stigma has been related to poor quality of life outcomes, family disintegration, and lack of community participation and contribution, to name a few (Ferrante, March 2007). By identifying stigma as a major barrier to receiving health care, researchers and policymakers are one step closer to eliminating the problem. Public education campaigns and empowering older adults will enable more older adults to seek out appropriate services. Interventions aimed at reducing feelings of stigma within the individual with behavioral health problems is also an important step for researchers.

The costs associated with not receiving treatment are high for this population. Untreated behavioral health problems lead to complications with the treatment of physical health problems and make recovery difficult to attain. When identified early, behavioral health problems in older adults can be treated appropriately and cost-effectively. This calls for improvements in the health care service system, including improved training for providers in working with older adults to prevent and treat behavioral health problems.

All of these factors make identification and treatment provision to older adults with behavioral health problems difficult. There is a pressing need to remedy the situation as the Baby Boom generation ages and the numbers of older adults living in this country grow. However, researchers in the field of aging studies are working toward remedying

these issues and ensuring that those people in need of services are identified and served in a timely and appropriate manner.

Study Aims

The aims of this study are to 1) examine the levels of perceived stigma associated with behavioral health problems and mental health services within a sample of older primary care patients, 2) determine whether stigma is a static or dynamic variable, and 3) identify which mental health factors are affected by perceived stigma.

To address these aims, several research questions were generated and tested through analyses of the data collected through the PRISM-E Study. PRISM-E is a multi-site, longitudinal (three points in time), randomized trial comparing two behavioral health models of care for older adults with depression, anxiety, and/or at-risk drinking. For this study, the research questions and hypotheses are:

1. Which demographic and behavioral health variables are associated with level of stigma at baseline?
2. Does level of stigma change over the three time points? Does change vary according to engagement?

Hypothesis One. Respondents randomly assigned to the integrated care model (co-located services) are hypothesized to demonstrate greater reductions in perceived stigma than those in the enhanced referral model. Previous research has demonstrated that older adults receiving care in co-located treatment models display better treatment adherence, satisfaction with care, and a decrease in symptoms (Bartels et al., 2004; Gallo et al., 2004; Katon et al., 1997) than those in usual care models. Co-located practices also lend an added credibility to the behavioral health specialist, perhaps leading to improved

engagement in services (Speer & Schneider, 2003), improved communications, and less stigma (Williams et al., 2006).

3. What is the relationship between change in stigma and change in behavioral health variables over time?

Hypothesis Two. It is predicted that as feelings of stigma improve over time, behavioral health outcomes will also improve over time. Research has demonstrated strong associations between self-esteem, depressive symptoms, and perceived stigma. Improvements in self-esteem and depression have been linked to decreased feelings of perceived stigma, indicating that perceived stigma is not a stable character trait and is able to change (Link et al, 2001; 2002). Although the current research study will not be able to determine causality, it is believed that these variables will have a positive relationship.

4. Assuming level of stigma does change over time, which variables are related to change over time?

Hypothesis Three. Based on previous literature (Rusch, Angermeyer, & Corrigan, 2005; Sirey et al., 2001), it is predicted that respondents with lower levels of feelings of stigma at baseline will demonstrate greater improvements in behavioral health outcomes over time. The reasoning behind this hypothesis is that if a person feels no or little stigma at the onset of treatment, he or she will be more likely to become engaged in treatment and attend the treatment sessions.

Chapter Two

Method

Research Design

The research design for the current study is a secondary analysis of data collected for the Primary Care Research in Substance Abuse and Mental Health for Elderly (PRISM-E) study. This dataset allowed for an examination of stigma and how it is related to behavioral health variables within a large sample of older adults from around the United States. The PRISM-E study will be described in detail below.

PRISM-E

The Primary Care Research in Substance Abuse and Mental Health for Elderly (PRISM-E) study was a multi-site, randomized, comparative trial examining two models of care for persons aged 65 and older with symptoms of depression, anxiety, and at-risk drinking. This study is the largest randomized study of behavioral health care among the elderly to date. The overall goal of the study was to compare the effects of integrated behavioral health care models and enhanced referral care models on engagement, participation, patient clinical outcomes, and cost-effectiveness for the target conditions of depression, anxiety, and at-risk drinking in older adults (Levkoff et al., 2004). Patients randomized to the integrated care model received behavioral health services in their primary care clinic from a mental health provider, while patients randomized to the enhanced referral model received a referral from their primary care provider to attend a

specialty behavioral health clinic geographically separate from their primary care provider (Chen et al., 2006).

Primary care patients were enrolled in the study at ten sites across the United States. Each site contained at least one primary care clinic for recruitment, and integrated care and referral models for treatment within a specific geographic region. A total of 34 primary care clinics/practices and 22 mental health/substance abuse specialty agencies participated in the trial. The study sites included five Veterans Affairs (VA) medical centers, three community mental health centers, and two hospital networks (Levkoff et al., 2004).

Service models. Participants were randomly assigned to receive treatment for depression, anxiety, and/or at-risk drinking thorough one of two models: the integrated care model or the enhanced referral model. The integrated care models were sites where the behavioral health care providers were co-located within primary care. Because older adults tend to seek mental health treatment in primary care (Kaplan et al., 1999), integrating behavioral health and primary care may reduce the stigma and other barriers associated with specialty mental health care. Integrated models have been found to improve medication adherence, increase patient satisfaction with care, and decrease psychological symptoms (Katon et al., 1997). Integrated service delivery has also been related to declining trends in institutionalization, lower rates of caregiver burden, and lower rates of deterioration (Tourigny et al., 2004).

In the PRISM-E study, integrated care model sites met four criteria: 1) sites had to have their integrated model in operation for a minimum of six months before the start of the study; 2) mental health and substance abuse services must have been co-located in a

primary medical care clinic with no distinction between the two in terms of signage, staff, or clinic names; 3) mental health and substance abuse services must have been provided by certified specialists in collaboration with primary care providers; and 4) primary care providers were to remain involved in the patients' care by documenting ongoing communication with the mental health/substance abuse services staff (Levkoff et al., 2004). Appointments with the mental health and substance abuse provider were required to be scheduled within 2 to 4 weeks following the primary care provider visit (Bartels et al., 2004).

The enhanced referral model sites provided mental health and substance abuse services in a specialty setting that was physically separate and designated as a mental health/substance abuse clinic. The referral model at each site was required to include three elements: 1) all patients with an identifiable mental health or at-risk drinking problems received an appointment with the specialty mental health agency designated by the primary care clinic; 2) specialty services were provided in a physically separate location and designated as a mental health/substance abuse clinic; and 3) mental health and substance abuse services were provided by licensed clinicians. Enhanced referral sites were required to meet certain criteria to ensure it was well functioning, such as facilitating transportation for patients to the referral clinic, ensuring patients received an appointment with the specialist within 4 weeks of randomization, notifying the primary care clinic if the patient failed to attend their first visit, and ensuring a process for emergency or urgent consults (Levkoff et al., 2004).

Adherence to the required criteria was assessed during site visits by the coordinating center staff. Since many of the sites had well-functioning treatment models

in place prior to the start of the study, investigators decided against requiring specific clinical interventions, with the exception of at-risk drinking in the integrated model. Basic information was collected on each behavioral health treatment visit, including the type and amount of intervention each participant received. Participants randomized to the integrated model who exhibited at-risk drinking received Brief Alcohol Intervention, a manualized intervention developed specifically for older adults by Barry, Oslin, and Blow (2001; Levkoff et al., 2004).

Study Sample

Any person aged 65 or older who had a primary care appointment at a participating clinic between March 2000 and March 2002 was screened for a mental health disorder or at-risk drinking ($N = 24,154$). Another 776 patients were referred to the study by their primary care provider. Out of the 24,930 initially screened, 1,102 were ineligible to continue in the screening process due to cognitive impairment or incomplete data. VA sites also disqualified any females from participating in the study. Another 17,398 screened negative for any of the three required behavioral health conditions (depression, anxiety, and/or at-risk drinking). Of the 6,430 eligible participants who screened positive for signs of mental health and/or alcohol misuse problems (about 25% of those screened), 3,225 patients were ineligible because they were currently receiving mental health/substance abuse treatment or refused to complete the next step of the screening process, which was the baseline assessment. Following the first screening, 3,205 patients completed the baseline assessment. Of those, 1,183 were excluded due to incomplete information, no target diagnosis, identified as being hypomanic, psychotic, and/or were receiving mental health or substance abuse treatment. The final study group

comprised 2,022 participants who met study criteria, consented to participate in the study, and were randomized to one of the two study conditions (Bartels et al., 2004).

Patients at eight sites were randomized to treatment models through a permuted blocks design, stratified by site, major diagnostic category, and age group (65 to 74 years, and 75 years or older). Blocks of size six were used for younger participants, and size four for older participants. Two VA sites already had well-functioning randomization procedures in place prior to the onset of the study. These two sites assigned patients to the models based on their Social Security number. Analyses conducted by the investigators showed this method to be unbiased and comparable to the randomization procedures used at the other eight sites (Levkoff et al., 2004).

Measures

The screening interview included measures such as the General Health Questionnaire, suicidal ideation questions modified from the PRIME-MD, and questions on quantity/frequency of alcohol consumption. The baseline interview diagnosed depression, anxiety, and at-risk drinking using the following instruments: Mini-International Neuropsychiatric Interview, Center for Epidemiological Studies Depression Scale (CES-D), Beck Anxiety Inventory, an alcohol frequency/quantity scale, and a detailed medication review. Additional assessments included demographic data, the Paykel Suicide Scale, the Short Michigan Alcohol Screening Test-Geriatric Version (S-MAST-G), and the Medical Outcomes Study 36-Item Short Form, and a stigma assessment scale, along with other attitudinal questions. In addition to completing a screening interview to identify potential participants, study staff completed interviews with participants at baseline (conducted within six weeks of the initial screening), 3-

months post-enrollment (90 days after baseline assessment), and again at 6-months post-enrollment (180 days after baseline assessment; Herr & Zubritsky, 2005, December).

Stigma. The PRISM-E protocol includes the SAMHSA Mental Health and Alcohol Abuse Stigma Assessment. The assessment contains seven items and was administered at baseline, three, and six months post-enrollment. The items are presented in Table 1. Chen and colleagues (2006) analyzed the first item from the Stigma Assessment Scale in a multiple regression procedure predicting satisfaction with mental health services provided in the PRISM-E study. In their study, this one stigma item was found to be marginally associated with satisfaction, with those participants indicating higher levels of stigma feeling less satisfied with their behavioral health services. Unfortunately, no psychometric information on the Stigma Assessment Scale was included in this article. This is the only published article based on PRISM-E that uses the Stigma Assessment Scale, therefore it is an area of PRISM-E that has been relatively unexplored until this point.

Diagnosis/Outcome. Participants were assessed at baseline, 3-months, and 6-months for depression, anxiety, and at-risk alcohol use. A number of measures were used in order to capture this information from participants and will be described below. Several of the measures are from the Mini-International Neuropsychiatric Interview (MINI; Sheehan et al., 1998), a short, structured interview designed for diagnosing disorders based on the Diagnostic and Statistical Manual Disorders IV (DSM-IV; American Psychiatric Association, 1994).

Table 1.
Stigma Assessment Scale

SAMHSA Mental Health and Alcohol Use Stigma Assessment

“Some people consider a mental health or an alcohol problem a mark of shame, and others do not. We are trying to find out what older persons feel about this issue. The next few questions ask how you would react if you had to deal with such a problem.”

1.	Would you be embarrassed or ashamed if you had a mental health problem?					
	Not at all	Not Very	Somewhat	Very	Extremely	Don't Know/Refused
2.	Would you be embarrassed or ashamed if you had an alcohol abuse problem?					
	Not at all	Not Very	Somewhat	Very	Extremely	Don't Know/Refused

NOTE: If stigma exists (“Not Very” or above) for only mental health or only alcohol, ask remaining questions accordingly.

3.	Do you think people around you would think differently of you if you received mental health or alcohol abuse treatment?					
	Not at all	Not Very	Somewhat	Very	Extremely	Don't Know/Refused
4.	Would it be difficult for you to start mental health or alcohol abuse treatment if other people knew that you were going to be in treatment?					
	Not at all	Not Very	Somewhat	Very	Extremely	Don't Know/Refused
5.	How comfortable would you be talking about your mental health or alcohol abuse problems with your primary care doctor?					
	Not at all	Not Very	Somewhat	Very	Extremely	Don't Know/Refused
6.	How comfortable would you be talking about your mental health or alcohol abuse problems with a counselor or mental health professional?					
	Not at all	Not Very	Somewhat	Very	Extremely	Don't Know/Refused
7.	Would it be difficult for you to obtain treatment for a mental health or alcohol abuse problem in a setting that was clearly identified as a mental health clinic or alcohol treatment center?					
	Not at all	Not Very	Somewhat	Very	Extremely	Don't Know/Refused

Measures of depressive disorders. Depression was assessed using four scales:

MINI Major Depression Scale, MINI Dysthymia Scale, MINI Depression History Scale, and the Center for Epidemiological Studies Depression Scale (CES-D). The MINI Major

Depression Scale was asked of participants who indicated they had felt consistently depressed for the past two weeks and/or felt less interested in most things over the past two weeks. The MINI Major Depression Scale consists of seven items assessing respondents' appetite, sleep habits, movement problems, energy level, feelings of worthlessness and guilt, ability to concentrate, and feelings of suicide that occurred over the past two weeks. The responses were summed to create a range from 0 to 7, with higher scores indicating a greater severity of depression. Those who scored a 3 or higher (along with meeting other criteria) were identified as having major depression.

The MINI Dysthymia Scale was asked of those participants who had feelings of depression but did not meet the criteria for Major Depression. Those who indicated that they had felt sad most of the time for the last two years and that period was not relieved for two months or more were administered the MINI Dysthymia Scale. The MINI Dysthymia Scale consists of six items assessing appetite, sleep habits, energy level, self-confidence, ability to concentrate, and feelings of hopelessness during the past two years. The responses were summed to create a range from 0 to 6, with higher scores indicating a greater severity of dysthymia. Those who scored a 2 or higher were identified as having dysthymia.

The MINI Depression History Scale was asked of those participants who had feelings of depression but did not meet the criteria for major depression or dysthymia. The MINI Depression History Scale was asked of those participants who indicated that they had felt depressed for a period of two weeks or more during their lifetime. The MINI Depression History Scale consisted of seven questions assessing the participants' appetite, sleep habits, movement problems, energy level, feelings of worthlessness,

ability to concentrate, and suicidal feelings. The responses were summed to create a range from 0 to 7, with higher scores indicating a greater severity of depressive symptoms. Those who scored a 3 or higher were identified as having a positive history of depression. The MINI Depression History Scale was only assessed at Baseline (Time 1).

The CES-D (Radloff, 1977) was asked of a participants identified as having major depression, dysthymia, minor depression, a history of depression, or who was taking anti-depressant/anti-anxiety medications. The CES-D is a twenty item self-report inventory designed to assess an individual's depressive symptoms over the past seven days. A score is 16 or more indicates depression. The author reports high estimates of internal consistency (Radloff, 1977).

Measures of anxiety disorders. Anxiety was assessed using three scales: MINI Panic Disorder Scale, MINI Generalized Anxiety Scale, and the Beck Anxiety Inventory (BAI). The MINI Panic Disorder Scale was asked of those participants who indicated during their lifetime they had had spells of feeling anxious occurring unexpectedly and lasting more than 10 minutes. The MINI Panic Disorder Scale contained 13 items assessing respondents' feelings during those spells including physical and emotional symptoms. Responses were summed to create a total score that ranged from 0 to 13, with higher scores indicating a greater severity of symptoms of panic disorder. Those who scored a 4 or higher were identified as having a panic disorder.

The MINI Generalized Anxiety Disorder Scale was asked of those who indicated that they had been excessively worried or anxious most days over the past six months which interfered with functioning and did not meet criteria for panic disorder. The MINI Generalized Anxiety Disorder Scale consisted of six items assessing feelings of

restlessness, tenseness, tiredness, irritability, difficulty sleeping, and difficulty concentrating during the past six months. Responses were summed to create a total score that ranged from 0 to 6, with higher scores indicating a greater severity of symptoms of generalized anxiety disorder. Those who scored a 3 or higher were identified as having a generalized anxiety disorder.

The Beck Anxiety Inventory (BAI; Beck, Epstein, Brown, & Steer, 1988) was asked of participants who scored positive for panic disorder, generalized anxiety disorder, or currently taking anti-depressant or anti-anxiety medication. The BAI is a self-report questionnaire consisting of 21 items assessing anxiety symptoms over the past week. Responses were summed to create a total score ranging from 0 to 62, with higher scores indicating greater severity of symptoms. The BAI has been reported to have good reliability and validity (Carmin, Pollard, & Gillock, 1999).

Measures of at-risk drinking. Participants who indicated having at least one alcoholic drink during the past year were screened for at-risk alcohol use. Participants who had an alcoholic beverage in the past week were asked to indicate the total number of drinks ingested during the past week. Respondents were also asked to indicate the number of times they had four or more drinks in the same day during the last three months. At-risk drinking was defined as drinking more than 14 drinks per week for men and 12 drinks per week for women or having four or more binges (defined as four or more drinks in a day) during the last three months (Levkoff et al., 2004).

The Short Michigan Alcoholism Screening Test – Geriatric Version (SMAST-G; Blow, Gillespie, Barry, Mudd, & Hill, 1998) was administered to those participants who were positive for at-risk drinking. The SMAST-G consisted of ten items assessing a

respondents drinking behavior, for example, the frequency of underestimating drinking, skipping meals when drinking, memory loss associated with drinking. The responses to the SMAST-G were summed to create a score ranging from 0 to 10, with scores of two or higher indicating a need for further assessment for at-risk drinking behavior. The SMAST-G has been demonstrated to have a specificity of 97% and a sensitivity of 85% when compared with DSM-3-R diagnosis of alcohol abuse or dependence (Blow et al., 1998).

Analysis Plan

Analysis of the PRISM-E data will begin with descriptive statistics in order to gain a more detailed understanding of the characteristics of the sample and the levels of perceived stigma of participants. A detailed examination of the Stigma Assessment Scale will take place. This examination will focus on the content and structure of the instrument and will include inter-item correlation, item-total correlation, reliability analysis, and finally, a factor analysis.

Research Question One will attempt to identify those demographic and behavioral health variables that are associated with baseline levels of stigma. Attempts to answer this question include the development of a correlation table examining the relationship between baseline stigma variable and selected mental health variables, for example scores from the CES-D, S-MAST-G, and MINI depression scale. The correlation table will provide descriptive information about the relationships between the behavioral health variables and level of stigma.

Due to skip patterns of the PRISM-E research protocol, not all participants answered all of the behavioral health questions. The following measures have the highest

response rate and will be included in a multiple regression analysis to examine the relationship between level of stigma at baseline and behavioral health variables: CES-D, BAI, and the frequency of alcohol use. Demographic variables (e.g., age, gender, race/ethnicity) will also be included in multiple regression analysis. When appropriate, demographic variables will be dichotomized.

Research Question Two seeks to identify if level of stigma changes over the three time points. The second part of the question will examine if engagement has an impact on change in perceived stigma over time. The analysis plan for this question includes conducting a repeated measure analysis of variance (ANOVA) model to identify any significant changes in the scores of the Stigma Assessment Scale over time. If there is a significant change, the next step will include an ANOVA mixed design which will examine both change over time and differences by group (classified as engaged/not engaged). PRISM-E protocol defines engaged as attending at least one behavioral health treatment session. Hypothesis One will also seek to be supported through this analysis plan. Hypothesis One predicts that the participants assigned to the integrated care model (which utilized a co-location service delivery model) will demonstrate greater improvements in feelings of stigma compared to their peers assigned to the enhance referral model of care.

Research Question Three attempts to clarify the relationship between change in stigma and change in behavioral health variables over time. As with Research Question One, the analysis for this question will begin with the development of a correlation table. Change in level of stigma will be captured by calculating the change in stigma from Time 1 to Time 3, a 6-month interval. Changes in the mental health variables will be calculated

in the same way. The correlation table will pair the change in stigma variable with selected mental health variables, for example change scores from the CES-D, S-MAST-G, MINI depression scale, etc. The next step will include conducting a multiple regression analysis to examine the relationship between change in level of stigma and in the main behavioral health measures: CES-D, BAI, and the frequency of alcohol use. These analyses will also seek to confirm Hypothesis Two, which states that as feelings of stigma improve over time, behavioral health variables will also improve over time.

The fourth Research Question is an attempt to understand which variables are related to the change in stigma levels over time. To answer this question, multiple regression will be performed to predict change in level of stigma from Time 1 to Time 3 by past behavioral health service use, number of PRISM-E treatment sessions attended, satisfaction with PRISM-E services, cultural competence of PRISM-E services, diagnosis, and the model of assignment. The variable categorizing a site as VA or non-VA will be included to control for any influence by site. These analyses will also seek to confirm Hypothesis Three which predicts that respondents with lower levels of feeling of stigma at baseline will demonstrate greater improvements in behavioral health outcomes over time compared to those with greater levels of stigma.

Chapter Three

Results

Sample Characteristics

The final sample included in the analyses contained 2,022 participants. The majority of participants were male, White, married/partnered, and averaged 74 years of age. Participants generally lived with others, had a high school education or less, and rated their physical health as fair. Nearly two-thirds of the sample was enrolled into the study through VA Medical Centers, where only males were eligible for participation, explaining why roughly three-quarters of the sample were males (see Table 2). The sample was evenly divided between the two treatment models with 982 participants randomly assigned to the integrated care model and 1,010 randomized to the enhanced referral care model (30 cases are missing this information).

Level of Stigma

Respondents were asked to indicate their feelings of stigma associated with mental health or alcohol abuse problems at the baseline interview. Item 1 of the Stigma Assessment Scale asks “Would you be embarrassed or ashamed if you had a mental health problem?” and respondents were asked to respond on a five-point Likert-type scale ranging from “Not at All” to “Extremely”. Figure 1 illustrates the responses to this question. While nearly half of respondents indicated that they would not be embarrassed or ashamed if they had a mental health problem (46.3%), 53.7% of respondents indicated

Table 2.
Sample Characteristics ($N = 2,022$)

	Total Sample ($N = 2,022$)	No Mental Health Stigma Indicated ($n = 896$)	Mental Health Stigma Indicated ($n = 1,039$)
Age (Years) – Mean (SD)	73.5 (6.2)	73.3 (6.1)	73.5 (6.2)
Range	65 - 103	65 - 94	65 - 103
Gender			
Male – n (%)	1,461 (72.3%)	706 (78.8%) ¹	705 (67.9%) ¹
Race/Ethnicity			
White – n (%)	1,065 (52.7%)	426 (47.5%) ¹	607 (58.4%) ¹
Black – n (%)	510 (25.2%)	296 (33.0%) ¹	187 (18.0%) ¹
Hispanic – n (%)	302 (14.9%)	115 (12.8%)	163 (15.7%)
Asian – n (%)	112 (5.5%)	47 (5.2%)	63 (6.1%)
Other – n (%)	53 (2.6%)	12 (1.6%)	36 (3.5%)
Marital Status			
Married/Partnered	972 (48.1%)	400 (44.6%) ¹	539 (51.9%) ¹
Widowed	500 (24.7%)	225 (25.1%)	245 (23.6%)
Divorced	310 (15.3%)	147 (16.4%)	149 (14.3%)
Never married	123 (6.1%)	62 (6.9%)	58 (5.6%)
Separated	108 (5.3%)	58 (6.5%)	44 (4.2%)
Living Arrangement			
Live with others	1,308 (64.7%)	569 (63.5%)	687 (66.1%)
Live alone	693 (34.3%)	316 (35.3%)	343 (33.0%)
Highest Level of School Completed			
Less than 8 th grade	428 (21.2%)	177 (19.8%)	222 (21.4%)
Less than 12 th grade	447 (22.1%)	215 (24.0%)	216 (20.8%)
High school graduate/GED	451 (22.3%)	196 (21.9%)	233 (22.4%)
Some college/Trade school	380 (18.8%)	173 (19.3%)	198 (19.1%)
College graduate	180 (8.9%)	77 (8.6%)	98 (9.4%)
Graduate school	126 (6.2%)	55 (6.1%)	68 (6.5%)
Site Type			
VA Site	1,220 (60.3%)	620 (69.2%) ¹	566 (54.5%) ¹
Self-Rated Physical Health			
Excellent	52 (2.6%)	34 (3.8%)	38 (3.7%)
Very good	201 (9.9%)	88 (9.8%)	113 (10.9%)
Good	527 (26.1%)	242 (27.0%)	304 (29.3%)
Fair	795 (39.3%)	353 (39.4%)	367 (35.3%)
Poor	414 (20.5%)	175 (19.5%)	214 (20.6%)

¹Significantly different at $p < .05$

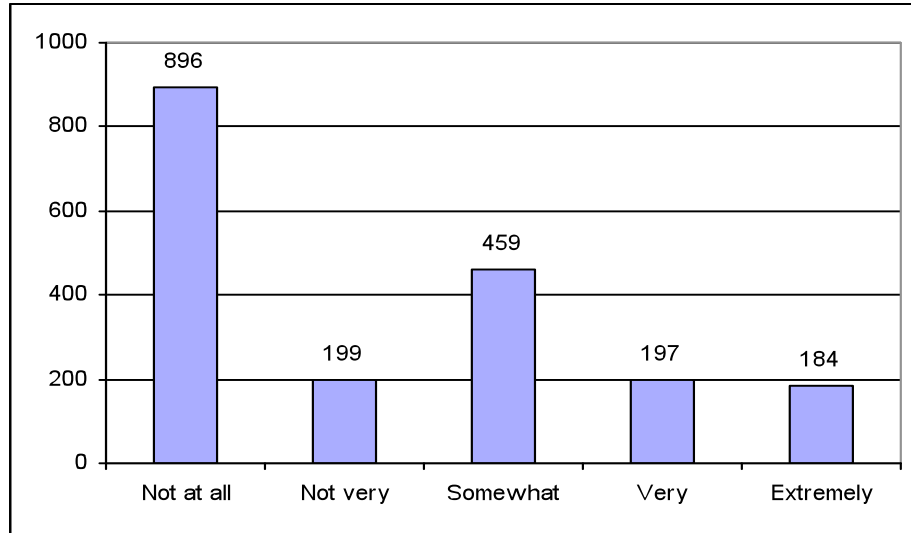


Figure 1. Would you be embarrassed or ashamed if you had a mental health problem?
 ($n = 1,935$)

that they did have some level of stigma associated with mental health problems. One-fifth (19.7%) of respondents indicated that they would feel “Very” or “Extremely” embarrassed or ashamed.

Table 3 presents the frequencies of responses on the Stigma Assessment Scale. Nearly half of participants indicated they believed others would think differently of them if they sought behavioral health treatment (43.2% responded “Somewhat”, “Very”, or “Extremely” to Item 3). Most participants indicated that it would not be very difficult for them to start treatment if others knew (58.3% responded “Not at All” or “Not Very” to Item 4). The majority of participants responded that they would feel comfortable talking about their behavioral health problems with their primary care physician or a behavioral health professional (60.0% and 55.1% respectively, answered “Very” or “Extremely” to Items 5 and 6). Just over half of participants responded that it would not be difficult for

them to obtain treatment from a setting clearly identified as a behavioral health treatment center (52.7% answered “Not at All” or “Not Very” to Item 7). Table 3 also illustrates the amount of data missing from the Stigma Assessment Scale. Items 1 and 2 are missing 4.3% and 6.5% respectively, while Items 3 through 7 are missing between 16% and 19%. It is not clear from the PRISM-E published literature why one-fifth of the responses are missing for these items.

Table 3.
Frequency of Responses to the Stigma Assessment Scale

Item	Response Options – <i>n</i> (%)					
	Not at All	Not Very	Some-what	Very	Extremely	Missing
1. Would you be embarrassed or ashamed if you had a mental health problem?	896 (44.3)	199 (9.8)	459 (22.7)	197 (9.7)	184 (9.1)	87 (4.3)
2. Would you be embarrassed or ashamed if you had an alcohol or substance abuse problem?	681 (33.7)	129 (6.4)	364 (18.0)	367 (18.2)	349 (17.3)	132 (6.5)
3. Do you think people around you would think differently of you if you received mental health or alcohol abuse treatment?	566 (28.0)	190 (9.4)	512 (25.3)	190 (9.4)	172 (8.5)	392 (19.4)
4. Would it be difficult for you to start mental health or alcohol abuse treatment if other people knew that you were going to be in treatment?	970 (48.0)	209 (10.3)	296 (14.6)	116 (5.7)	72 (3.6)	359 (17.8)
5. How comfortable would you be talking about your mental health or alcohol abuse problems with your primary care doctor?	112 (5.5)	99 (4.9)	250 (12.8)	741 (36.6)	473 (23.4)	339 (16.8)
6. How comfortable would you be talking about your mental health or alcohol abuse problems with a counselor or mental health professional?	115 (5.7)	113 (5.6)	312 (15.4)	712 (35.2)	402 (19.9)	368 (18.2)
7. Would it be difficult for you to obtain treatment for a mental health or alcohol abuse problem in a setting that was clearly identified as a mental health clinic or alcohol treatment center?	793 (39.2)	273 (13.5)	327 (16.2)	173 (8.6)	97 (4.8)	359 (17.8)

When the sample is divided and examined by baseline level of stigma associated with mental health problems, several statistically significant differences between the two groups are identified (see Table 2). No significant differences were seen for age ($t(1,933) = -0.92, p = .34$). Women were more likely to indicate feelings of stigma associated with mental health problems ($X^2(1, 1,908) = 28.22, p = .00$) than their male counterparts. Each racial/ethnic group offered as an option was coded as a separate variable, allowing participants to choose more than one category. To examine if any differences in feelings of stigma existed among the groups, each racial/ethnic group was included in a chi-square analysis, with mental health stigma indicated or not indicated and racial/ethnic group indicated or not indicated. Regarding racial/ethnic group differences, Whites were more likely than not to indicate feelings of stigma ($X^2(1, 1,932) = 23.09, p = .00$) and Blacks were less likely to indicate those feelings ($X^2(1, 1,932) = 57.95, p = .00$). No statistically significant differences were seen in the other racial/ethnic groups. Significant differences in feelings of stigma were evident by marital status ($X^2(4, 1,927) = 12.95, p = .01$), with those who were married likely to indicate feelings of stigma, while those who were separated, divorced, widowed, and never married were less likely to indicate feelings of stigma. No significant differences were seen when examined by living arrangement, level of schooling completed, diagnosis, or general health. Significant differences were seen for type of site, with participants from non-VA sites more likely to indicate feelings of stigma related to mental health problems ($X^2(1, 1,935) = 43.94, p = .00$) than were participants from VA sites.

Item 2 of the Stigma Assessment Scale asks “Would you be embarrassed or ashamed if you had an alcohol abuse problem?” and respondents were asked to respond

on a five-point Likert-type scale ranging from “Not at All” to “Extremely”. Figure 2 illustrates the responses to this item. Over two-thirds of respondents (64.0%) indicated that they had some level of stigma associated with alcohol abuse problems, with over one-third (37.9%) responding “Very” or “Extremely” embarrassed or ashamed.

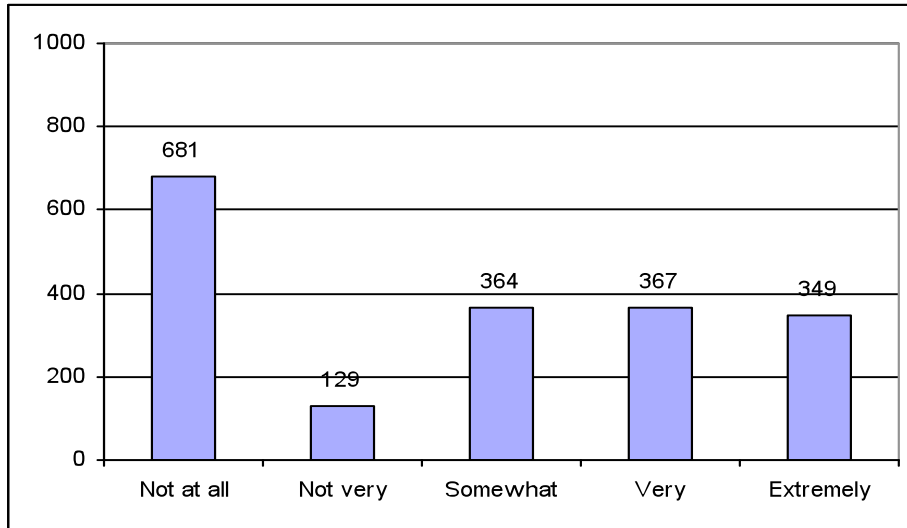


Figure 2. Would you be embarrassed or ashamed if you had an alcohol abuse problem? ($n = 1,890$)

Just over half of the sample was identified as having either a depressive or anxiety disorder and another 23% was identified as having both a depressive and an anxiety disorder. Twenty percent of the sample was identified as engaging in at-risk drinking behavior and 5% had a dual diagnosis of at-risk drinking along with a depressive and/or anxiety disorder (Table 4).

The Stigma Assessment Scale. The Stigma Assessment Scale is a seven-item, self-report measure of perceived stigma (presented in Table 1). When examining the content and scaling, it appears that there may be some structural problems with the measure. The

Table 4.
Diagnosis

Depressive Disorder Only	986 (48.8%)
Anxiety Disorder Only	62 (3.1%)
Anxiety Disorder and Depressive Disorder	457 (22.6%)
At-Risk Drinking Only	408 (20.2%)
At-Risk Drinking and Depressive and/or Anxiety Disorder	100 (4.9%)
Missing	9 (0.4%)

questions in the Stigma Assessment Scale are assessing the respondents' amount of embarrassment or comfort level; however, the response items are in fact measuring frequency. For example, the first question asks "Would you be ashamed or embarrassed if you had a mental health problem?" which structurally would elicit a dichotomous (yes/no) response. The question might have been worded better to ask "To what degree would you be ashamed...". The original scale ranges from "Not at all" to "Extremely" with "Somewhat" as a midpoint. According to Bass, Cascio, and O'Connor (1974), these scale items are measuring frequency, not amount and are not of approximately equal intervals. More appropriate response categories to the question of "To what degree would you be ashamed..." would be "None" or "Hardly Any", "Some", "Quite a bit", "An extreme amount" and "All." In addition, these suggested scale items have been measured to be relatively equal in their distance from each other, leading to a more precise measure.

The first two items of the Stigma Assessment Scale (Table 1) ask a person's level of embarrassment if he or she had either a mental health problem or an alcohol abuse problem. For the remaining analyses, the inclusion of either Item 1 or Item 2 will be based on the individual's diagnostic category. For example, if a person was identified as

having a mental health disorder (depressive or anxiety), Item 1 was used for the analyses. If an individual was identified as having an at-risk drinking classification, Item 2 was used. If an individual was identified as having a mental health and alcohol use disorder (dual diagnosis), the item with the highest level of stigma (either Item 1 or Item 2) was used in subsequent analyses. This procedure resulted in a new variable which will be referred to as The Embarrassed/Ashamed Item.

Internal consistency is the degree to which all the items in a scale ‘hang together’, or are associated and are measuring the same construct (Pallant, 2001). In order to assess the internal consistency of the Stigma Assessment Scale, several procedures were utilized. First, an inter-item correlation was calculated where each pair of the six items is correlated and then averaged to obtain an overall correlation for the items in the measure. Pearson Product Moment Correlations between the items ranged from a high of .429 between Embarrassed/Ashamed Item and Item 3 (“Would you be embarrassed or ashamed...” and “Do you think people around you would think differently...”, respectively) and a low of -.006 between items 3 and 5 (“Do you think people around you would think differently...” and “How comfortable would you be talking...primary care doctor?”, respectively). The average inter-item correlation was .234, small according to Cohen’s guidelines (1988).

In addition, a total score for the six items was computed and used as a seventh variable in the inter-item analysis to compute the average item-total correlation. Correlations with the new summed item ranged from a high of .643 with Item 3 (“Do you think people around you would think differently...”) and a low of .321 with Item 5 (“How comfortable would you be talking...primary care doctor?”). Table 5 displays the

item-correlation matrix including the new summed item. The average item-total correlation was medium at .482 (Cohen, 1988). The small average inter-item and medium item-total correlations, along with the variability in the inter-item correlations themselves indicate that the Stigma Assessment Scale is measuring more than one construct. If a scale is measuring more than one construct, or is multidimensional, it should not be combined to create a single scale.

To further explore this scale and its dimensionality, a reliability analysis for the scale was conducted using SPSS software, which provides more information on the internal consistency of the scale. The Cronbach's alpha coefficient for the reliability of the Stigma Assessment Scale was .437, which is well below the recommended level of .7, further indicating that the scale is multidimensional and measuring more than one construct (Pallant, 2001).

Finally, an exploratory factor analysis was conducted to determine the number of constructs that the stigma assessment is measuring. The sample size exceeded conventionally accepted minimum level for conducting a factor analysis (Nunnally, 1978; Tabachnick & Fidell, 1996) and inter-item correlations were at an acceptable level, with a Kaiser-Meyer-Olkin of Sampling Adequacy value of .617, meeting the recommended value of .6 (Kaiser, 1970; 1974) and the Bartlett's Test of Sphericity (Bartlett, 1954) reached statistical significance, meaning that it is appropriate to conduct a factor analysis with these data. The factor analysis revealed the presence of two components with eigenvalues exceeding 1, explaining 36.3% and 25.6% of the variance respectively. The screeplot also indicated a break after the second component. Two components were extracted for further examination using a Varimax rotation. Component 1 included two

variables, Component 2 included two variables, and two variables overlapped components (Table 6). The two-factor solution explained a total of 61.9% of the variance, with Component 1 contributing 31.0% and Component 2 contributing 30.8%. Items 1-2, 3, 4, and 7 comprise Component 1 and Items 5 and 6 comprise Component 2. According to Kline (1994), items are selected for a component based on its highest loading. Items 4 and 7 load on both components, but both items load higher on Component 1 (Kline, 1994), therefore were grouped with Component 1.

Table 5.
Inter-Item Correlation Matrix of Stigma Assessment Measure Items (*n*)

	Q1-2.	Q3.	Q4.	Q5.	Q6.	Q7.
Embarrassed/Ashamed Item (Q1-2)	1.00 (1,844)	.429* (1,531)	.269* (1,561)	-.033 (1,575)	-.023 (1,550)	.214* (1,561)
Q3.	.429* (1,531)	1.00 (1,630)	.322* (1,604)	-.006 (1,605)	.045 (1,583)	.149* (1,596)
Q4.	.269* (1,561)	.322* (1,604)	1.00 (1,663)	-.241* (1,640)	-.223* (1,617)	.478* (1,633)
Q5.	-.033 (1,575)	-.006 (1,605)	-.241* (1,640)	1.00 (1,683)	.638* (1,641)	-.215* (1,643)
Q6.	-.023 (1,550)	.045 (1,583)	-.223* (1,617)	.638* (1,641)	1.00 (1,654)	-.228* (1,619)
Q7.	.214* (1,561)	.149* (1,596)	.478* (1,633)	-.215* (1,643)	-.228* (1,619)	1.00 (1,663)
Sum of Q1-2 through Q7	.628* (1,844)	.643* (1,630)	.513* (1,663)	.321* (1,683)	.348* (1,654)	.441* (1,663)

*Correlation is significant at $p < .01$

Component 1 (which we labeled Perceived Stigma) includes items measuring level of embarrassment and the perception of a negative response from others regarding seeking behavioral health treatment. Component 2 (which we labeled Comfort Level) includes items measuring the respondents' level of comfort in talking with a service provider about their own mental health or alcohol abuse problems.

Based on the results of these analyses, the Stigma Assessment Scale measured more than one dimension of stigma and collapsing all items into one overall score would not be a valid measure for the purposes of this dissertation. The remaining research questions will utilize the Embarrassed/Ashamed Item, the Perceived Stigma Component, and the Comfort Level Component. Perceived Stigma and Comfort Level scores were computed using the mean of responses to the Embarrassed/Ashamed Item, 3, 4, and 7, and Items 5 and 6, respectively. Means were used instead of a summative score due to missing data on some of the items.

Table 6.
Factor Analysis Components

Abbreviated Items	Perceived Stigma (Component 1)	Comfort Level (Component 2)
Item 3. Do you think that others will think differently of you if you received MH/SA treatment?	.765	
Embarrassed/Ashamed Item. Would you be embarrassed or ashamed if you had a MH/SA problem?	.744	
Item 4. Would it be difficult to start MH/SA treatment if others knew?	.667	-.384
Item 7. Would it be difficult to get treatment from a place identified as a MH/SA clinic?	.527	-.426
Item 6. How comfortable would you be talking with a MH/SA professional?		.871
Item 5. How comfortable would you be talking about your MH/SA problems to your PCP?		.859

Research Questions

Research Question One: Which demographic and behavioral health variables are associated with level of stigma at baseline?

The analysis for this question began with the development of a correlation matrix pairing the baseline stigma variables (Embarrassed/Ashamed Item; Perceived Stigma, and Comfort Level) with selected baseline behavioral health variables, for example scores

from the CES-D, S-MAST-G, MINI depression scale. The correlation table provides descriptive information about the relationships between baseline behavioral health variables and baseline level of stigma. For the correlation table, a diagnostic hierarchy was assumed of the interview protocol of the PRISM-E study. For example, if a participant was identified as having major depression, questions about dysthymia and depressive symptoms were not asked during the baseline interview. For the purposes of this analysis, if a person was identified as having major depression, their data were recoded as positive for dysthymia and depressive symptoms. The same is true for those participants identified as having panic disorder – their missing data were recoded as positive for generalized anxiety disorder. This recoding method is both logical and has the effect of increasing the size of the sample available for creating the correlation table.

The correlations are presented in Table 7 and display some variability in the degree of the relationships between the baseline behavioral health variables and the baseline stigma variables (Embarrassed/Ashamed Item; Perceived Stigma, and Comfort Level). Correlations ranged from a low of $-.001$ (Perceived Stigma and Number of Alcoholic Drinks in the Last Week) to a high of $.169$ (Perceived Stigma and CES-D), and are considered small according to Cohen's guidelines (1988). It should be noted that higher scores on the Embarrassed/Ashamed Item and the Perceived Stigma Component indicate more feelings of stigma, higher scores on the Comfort Level Component indicate greater feelings of comfortableness.

Because not all participants answered all of the behavioral health questions (due to skip patterns), scores from the CES-D, BAI, and the frequency of alcohol use were included in a complete (not adjusted for other variables) multiple regression analysis to

examine the relationship between level of stigma at baseline and behavioral health variables. These three items were asked of the most participants therefore decreasing the incidence of missing responses. Demographic variables (age, gender, race/ethnicity) were also included in the multiple regression analysis. Race/ethnicity variables were coded as categorical variables (White/Non-White and Hispanic/non-Hispanic).

Table 7.
Correlations of Baseline Variables

Baseline Behavioral Health Variables	Correlation with Baseline Embarrassed/Ashamed Item <i>r</i> (<i>n</i>)	Correlation with Baseline Perceived Stigma <i>r</i> (<i>n</i>)	Correlation with Baseline Comfort Level <i>r</i> (<i>n</i>)
MINI Major Depression Scale	.117** (1,250)	.084** (1,339)	.078** (1,168)
MINI Dysthymia Scale	.034 (1,094)	.021 (1,173)	.010 (1,018)
MINI Depression History Scale	-.048 (1,384)	-.031 (1,480)	.080** (1,285)
CES-D	.162** (1,435)	.169** (1,532)	.042 (1,337)
MINI Panic Disorder Scale	.043 (192)	.080 (198)	.083 (173)
MINI Generalized Anxiety Scale	.072 (500)	.056 (509)	.080 (442)
Beck Anxiety Inventory (BAI)	.030 (728)	.079* (757)	-.038 (662)
Number of alcoholic drinks in the last week	.003 (726)	-.001 (802)	-.129** (735)
Number of alcoholic binges in the last three months	-.019 (961)	-.044 (1,050)	-.007 (943)
S-MAST-G	-.085 (472)	-.010 (547)	.120** (490)

* Significant at $p < .05$

** Significant at $p < .01$

Embarrassed/Ashamed Item regression model. The first model predicted the baseline score of Embarrassed/Ashamed Item using the variables age, gender (0 = male; 1 = female), race (0 = Non-White; 1 = White), ethnicity (0 = Non-Hispanic; 1 = Hispanic),

baseline scores of the CES-D, BAI, and frequency of alcohol use. Simultaneous complete multiple regression was used, meaning that all independent variables were entered into the equation at once. Results indicate that multicollinearity was not a problem in this analysis as evidenced by the small strength correlations between the independent variables and the acceptable tolerance levels. The regression model had an R^2 value of .062, meaning the independent variables accounted for only 6.2% of the variance in the dependent variable (Baseline Embarrassed/Ashamed Item), and was not significant (see Table 8). These results indicate that age, race/ethnicity, gender, baseline levels of depression, anxiety, and frequency of drinking were not significantly associated with baseline stigma levels.

Table 8.
Summary of Simultaneous Regression Analysis for Variables Predicting Baseline Embarrassed/Ashamed Item

Variable	<i>B</i>	<i>SE B</i>	β	<i>p</i>
Gender (0 = male; 1 = female)	.137	.215	.043	.525
Age	.003	.015	.013	.846
Race (0 = Non-White; 1 = White)	.410	.205	.146	.047
Ethnicity (0 = Non-Hispanic; 1 = Hispanic)	.652	.292	.166	.026
CES-D	.025	.010	.199	.010
BAI	-.009	.009	-.081	.283
# of Alcoholic Drinks in the Last Week	.003	.008	.027	.677

Perceived Stigma Component regression model. The next model predicted the baseline score of the Perceived Stigma Component using the variables age, gender (0 = male; 1 = female), race (0 = Non-White; 1 = White), ethnicity (0 = Non-Hispanic; 1 = Hispanic), baseline scores of the CES-D, BAI, and frequency of alcohol use. Simultaneous complete multiple regression was used, meaning that all independent variables were entered into the equation at once. Results indicate that multicollinearity was not a problem in this analysis as evidenced by the small strength correlations

between the independent variables and the acceptable tolerance levels. The regression model had an R^2 value of .046, meaning the independent variables accounted for only 4.6% of the variance in the dependent variable (Baseline Perceived Stigma Component), and was not significant (Table 9). These results indicate that age, race/ethnicity, gender, baseline levels of depression, anxiety, and frequency of drinking were not significantly associated with baseline perceived stigma levels.

Table 9.
Summary of Simultaneous Regression Analysis for Variables Predicting Baseline Perceived Stigma Component

Variable	<i>B</i>	<i>SE B</i>	β	<i>p</i>
Gender (0 = male; 1 = female)	.183	.147	.085	.214
Age	.007	.010	.045	.497
Race (0 = Non-White; 1 = White)	.183	.140	.096	.192
Ethnicity (0 = Non-Hispanic; 1 = Hispanic)	.130	.199	.049	.516
CES-D	.015	.007	.180	.021
BAI	.000	.006	-.004	.960
# of Alcoholic Drinks in the Last Week	.002	.005	.021	.751

Comfort Level Component regression model. The next model predicted the baseline score of the Perceived Stigma Component using the variables age, gender (0 = male; 1 = female), race (0 = Non-White; 1 = White), ethnicity (0 = Non-Hispanic; 1 = Hispanic), baseline scores of the CES-D, BAI, and frequency of alcohol use.

Simultaneous complete multiple regression was used, meaning that all independent variables were entered into the equation at once. Results indicate that multicollinearity was not a problem in this analysis as evidenced by the small strength correlations between the independent variables and the acceptable tolerance levels. The regression model had an R^2 value of .049, meaning the independent variables accounted for only 4.9% of the variance in the dependent variable (Baseline Comfort Level Component), and was not significant (see Table 10). These results indicate that age, race/ethnicity, gender,

baseline levels of depression, anxiety, and frequency of drinking were not significantly associated with baseline Comfort Level.

Table 10.
Summary of Simultaneous Regression Analysis for Variables Predicting Baseline Comfort Level Component

Variable	<i>B</i>	<i>SE B</i>	β	<i>p</i>
Gender (0 = male; 1 = female)	-.153	.157	-.067	.329
Age	.000	.011	.002	.974
Race (0 = Non-White; 1 = White)	-.221	.149	-.109	.140
Ethnicity (0 = Non-Hispanic; 1 = Hispanic)	.288	.212	.101	.176
CES-D	.003	.007	.035	.654
BAI	-.006	.006	-.074	.328
# of Alcoholic Drinks in the Last Week	-.009	.006	-.104	.117

Research Question Two: Does level of stigma change over the three time points? Does change vary according to engagement?

The analysis plan to test this research question included a repeated measures analysis of variance (ANOVA) model to analyze the total group and an ANOVA mixed design dividing the sample by engaged/not engaged. The PRISM-E protocol defines engaged as attending at least one behavioral health treatment session. Nearly two-thirds of the sample (59.8%) was classified as engaged.

Embarrassed/Ashamed Item. The means and standard deviations of the change in level of stigma for the total sample over time (baseline, 3-months, and 6-months post-enrollment) as measured by Stigma Assessment Scale Item 1-2 are presented in Table 11. Results from the repeated measures ANOVA examining the change in level of stigma for the total sample over time (baseline, 3-months, and 6-months post-enrollment) as measured by Embarrassed/Ashamed Item indicates that there is a significant effect for time, Wilks' Lambda = .939, $F(2, 1,258) = 41.177, p < .01$. These results indicate that the level of stigma as measured by Embarrassed/Ashamed Item significantly improved over

time. Post-hoc t-tests indicate that the Embarrassed/Ashamed Items differ significantly from each other from Baseline to 3-months, from 3-months to 6-months, and from Baseline to 6-months.

Table 11.
Change in Level of Stigma as Measured by Embarrassed/Ashamed Item

Time of Interview	Total Sample ($N = 1,260$) $M(SD)$	$F(p)$
Baseline	2.41 (1.41)*	41.177 (.000)
3-Months Post-Enrollment	2.19 (1.36)*	
6-Months Post-Enrollment	2.04 (1.29)*	

* $p < .01$

The means and standard deviations of the change in level of stigma (baseline, 3-months, and 6-months post-enrollment) as measured by Embarrassed/Ashamed Item by engagement are presented in the Table 12. Results from the ANOVA mixed design examining the change in level of stigma by engagement indicates that there is not a significant interaction, Wilks' Lambda = .999, $F(2, 1,257) = 0.333$, $p = .716$. These results indicate that the level of stigma as measured by Embarrassed/Ashamed Item did not significantly change over time as a function of engagement.

Table 12.
Change in Level of Stigma as Measured by Embarrassed/Ashamed Item by Engagement

Time of Interview	Engaged ($n = 817$) $M(SD)$	Not Engaged ($n = 443$) $M(SD)$	$F(p)$
Baseline	2.39 (1.42)	2.44 (1.39)	.333 (.716)
3-Months Post-Enrollment	2.17 (1.36)	2.23 (1.37)	
6-Months Post-Enrollment	2.04 (1.32)	2.04 (1.32)	

In order to further investigate the significant change in level of stigma over time, service model type (Enhanced Referral or Integrated Model) was included in an ANOVA mixed design equation. The means and standard deviations of the change in level of

stigma (baseline, 3-months, and 6-months post-enrollment) as measured by Embarrassed/Ashamed Item by type of treatment model are presented in Table 13. Results from the ANOVA mixed design examining the change in level of stigma by model indicates that there is not a significant interaction, Wilks' Lambda = .999, $F(2, 1,239) = 0.347$, $p = .707$. These results indicate that the level of stigma as measured by Embarrassed/Ashamed Item did not significantly change over time as a function of type of service model.

Table 13.
Level of Stigma as Measured by Embarrassed/Ashamed Item by Service Model Type

Time of Interview	Enhanced Referral Model ($n = 613$) $M(SD)$	Integrated Care Model ($n = 443$) $M(SD)$	$F(p)$
Baseline	2.46 (1.42)	2.36 (1.41)	
3-Months Post-Enrollment	2.21 (1.37)	2.17 (1.36)	.347 (.707)
6-Months Post-Enrollment	2.07 (1.32)	2.00 (1.28)	

Perceived Stigma Component. The means and standard deviations of the change in level of stigma for the total sample over time (baseline, 3-months, and 6-months post-enrollment) as measured by the Perceived Stigma Component are presented in Table 14. Results from the repeated measures ANOVA examining the change in the Perceived Stigma Component for the total sample over time (baseline, 3-months, and 6-months post-enrollment) indicates that there is a significant effect for time, Wilks' Lambda = .952, $F(2, 1,341) = 34.043$, $p < .01$. These results indicate that the level of stigma as measured by the Perceived Stigma Component did significantly improve over time. Post-hoc t-tests indicate that the Perceived Stigma Component Items differ significantly from each other from Baseline to 3-months, from 3-months to 6-months, and from Baseline to 6-months.

Table 14.
Change in Level of Stigma as Measured by the Perceived Stigma Component

Time of Interview	Total Sample ($N = 1,343$)		$F (p)$
	$M(SD)$		
Baseline	2.09 (0.95)*		34.043 (.000)
3-Months Post-Enrollment	1.97 (0.89)*		
6-Months Post-Enrollment	1.83 (0.88)*		

* $p < .01$

The means and standard deviations of the change in level of stigma (baseline, 3-months, and 6-months post-enrollment) as measured by the Perceived Stigma Component by engagement are presented in Table 15. Results from the ANOVA mixed design examining the change in level of stigma by engagement indicates that there is not a significant interaction, Wilks' Lambda = .997, $F(2, 1,340) = 1.945$, $p = .143$. These results indicate that the level of stigma as measured by the Perceived Stigma Component did not significantly change over time as a function of engagement.

Table 15.
Change in Level of Stigma as Measured by the Perceived Stigma Component by Engagement

Time of Interview	Engaged ($n = 819$)	Not Engaged ($n = 524$)	$F (p)$
	$M(SD)$	$M(SD)$	
Baseline	2.05 (0.95)	2.15 (0.95)	1.945 (.143)
3-Months Post-Enrollment	1.98 (0.90)	1.95 (0.87)	
6-Months Post-Enrollment	1.82 (0.88)	1.84 (0.88)	

In order to further investigate the significant change in level of stigma over time, model type was included in an ANOVA mixed design equation. The means and standard deviations of the change in level of stigma (baseline, 3-months, and 6-months post-enrollment) as measured by the Perceived Stigma Component by type of treatment model are presented in Table 16. Results from the ANOVA mixed design examining the change in level of stigma by model indicates that there is not a significant interaction, Wilks'

Lambda = 1.000, $F(2, 1,321) = 0.303$, $p = .739$. These results indicate that the level of stigma as measured by the Perceived Stigma Component did not significantly change over time as a function of type of model.

Table 16.
Change in Level of Stigma as Measured by the Perceived Stigma Component by Service Model Type

Time of Interview	Enhanced Referral Model ($n = 659$) $M(SD)$	Integrated Model ($n = 665$) $M(SD)$	$F (p)$
Baseline	2.11 (0.99)	2.07 (0.91)	0.303 (.739)
3-Months Post-Enrollment	1.96 (0.89)	1.99 (0.90)	
6-Months Post-Enrollment	1.83 (0.89)	1.84 (0.88)	

Comfort Level Component. The means and standard deviations of the change in level of stigma for the total sample over time (baseline, 3-months, and 6-months post-enrollment) as measured by the Comfort Level Component are presented in Table 17. Results from the repeated measures ANOVA examining the change in the Comfort Level Component for the total sample over time (baseline, 3-months, and 6-months post-enrollment) indicates that there is not a significant effect for time, Wilks' Lambda = .995, $F(2, 825) = 2.035$, $p = .131$. These results indicate that the level of stigma as measured by the Comfort Level Component did not significantly improve over time.

Table 17.
Change in Level of Stigma as Measured by the Comfort Level Component

Time of Interview	Total Sample ($N = 827$) $M(SD)$	$F (p)$
Baseline	3.77 (1.03)	2.035 (.131)
3-Months Post-Enrollment	3.80 (0.97)	
6-Months Post-Enrollment	3.85 (0.92)	

The means and standard deviations of the change in level of stigma (baseline, 3-months, and 6-months post-enrollment) as measured by the Comfort Level Component by engagement are presented in Table 18. Results from the ANOVA mixed design examining the change in level of stigma by engagement indicates that there is not a significant interaction, Wilks' Lambda = .998, $F(2, 824) = 1.022$, $p = .360$. These results indicate that the level of stigma as measured by the Comfort Level Component did not significantly change over time as a function of engagement.

Table 18.
Change in Level of Stigma as Measured by the Comfort Level Component by Engagement

Time of Interview	Engaged ($n = 503$) <i>M(SD)</i>	Not Engaged ($n = 324$) <i>M(SD)</i>	<i>F (p)</i>
Baseline	3.84 (1.00)	3.67 (1.06)	1.022 (.360)
3-Months Post-Enrollment	3.82 (0.94)	3.77 (1.01)	
6-Months Post-Enrollment	3.86 (0.91)	3.84 (0.94)	

In order to further investigate the significant change in level of stigma over time, model type was included in an ANOVA mixed design equation. The means and standard deviations of the change in level of stigma (baseline, 3-months, and 6-months post-enrollment) as measured by the Comfort Level Component by type of treatment model are presented in Table 19. Results from the ANOVA mixed design examining the change in level of stigma by model indicates that there is not a significant interaction, Wilks' Lambda = .998, $F(2, 809) = 0.840$, $p = .432$. These results indicate that the level of stigma as measured by the Comfort Level Component did not significantly change over time as a function of type of model.

To further examine the relationship between stigma and engagement, a set of three Pearson correlations were conducted to determine if baseline level of stigma (as

measured by the Embarrassed/Ashamed Item, the Perceived Stigma Component, and the Comfort Level Component) affected the number of treatment sessions attended. These correlations were all small, according to Cohen’s guidelines (1988); all were less than .008.

Table 19.
Change in Level of Stigma as Measured by the Comfort Level Component by Service Model Type

Time of Interview	Enhanced Referral Model (<i>n</i> = 423) <i>M</i> (<i>SD</i>)	Integrated Model (<i>n</i> = 389) <i>M</i> (<i>SD</i>)	<i>F</i> (<i>p</i>)
Baseline	3.77 (1.77)	3.77 (0.99)	0.840
3-Months Post-Enrollment	3.80 (0.96)	3.81 (0.98)	(.432)
6-Months Post-Enrollment	3.88 (0.92)	3.81 (0.92)	

Research Question Three: What is the relationship between change in stigma and change in behavioral health variables over time?

As with Question 2, the analysis for this question began with the development of a correlation table. Change in level of stigma was captured by calculating the change in Embarrassed/Ashamed Item, the Perceived Stigma Component, and the Comfort Level Component from baseline to 6-months. Changes in the behavioral health variables were captured by calculating the changes in the variables from baseline to 6-months. The correlation table pairs the change in the stigma variables with selected behavioral health variables, for example change scores from the CES-D, S-MAST-G, MINI depression scale, etc. It should be noted that higher scores on the Embarrassed/Ashamed Item and the Perceived Stigma Component indicate greater feelings of stigma and higher scores on the Comfort Level Component indicate greater feelings of comfortableness.

The correlation table displayed in Table 20 and illustrates the variability in the strengths of the relationships between the changes in the behavioral health variables and

the change in the stigma variables (Embarrassed/Ashamed Item, Perceived Stigma Component, and Comfort Level Component). Variables were removed if fewer than 50 participants had a score for that scale. The correlations range from a low of .001 (the Perceived Stigma Component and CES-D) to a high of .174 (Comfort Level Component and the MINI Major Depression Scale) All of the correlations are considered small according to Cohen’s guidelines (< .290; 1988).

Because not all participants answered all of the behavioral health questions (due to skip patterns), the following variables were included in a simultaneous complete multiple regression analysis to examine the relationship between change in level of stigma and change in behavioral health variables from baseline to 6-months: CES-D, BAI, and the frequency of alcohol use. These items were asked of the most participants therefore decreasing the incidence of missing responses.

Table 20.
Correlations of Change in Stigma Items and Change in Behavioral Health Variables

Behavioral Health Variables	Change in Embarrassed/Ashamed Item <i>r (n)</i>	Change in Perceived Stigma <i>r (n)</i>	Change in Comfort Level <i>r (n)</i>
MINI Major Depression Scale	.118* (735)	-.027 (651)	.174* (434)
CES-D	.179* (991)	.001 (852)	.159* (547)
MINI Generalized Anxiety Scale	.081 (104)	.067 (89)	.042 (65)
Beck Anxiety Inventory (BAI)	.057 (345)	-.035 (279)	.057 (184)
Number of alcoholic drinks in the last week	.014 (555)	-.042 (472)	-.028 (333)
Number of alcoholic binges in the last three months	.027 (604)	.049 (511)	-.017 (349)
S-MAST-G	.022 (333)	-.001 (325)	.057 (227)

* Significant at $p < .01$

Embarrassed/Ashamed Item regression model. The first model predicted the change in Embarrassed/Ashamed Item from baseline to 6-months using the change scores of the CES-D, BAI, and frequency of alcohol use (change from baseline to 6-months).

Simultaneous complete multiple regression was used, meaning that all independent variables were entered into the equation at once. Results indicate that multicollinearity was not a problem in this analysis as evidenced by the small strength correlations between the independent variables and the acceptable tolerance levels. The regression model had an R^2 value of .033, meaning it accounted for only 3.3% of the variance in the dependent variable, and was not significant (Table 21). These results indicate that changes in the levels of depression, anxiety, and frequency of drinking variables were not significantly associated with changes in the Embarrassed/Ashamed Item.

Table 21.
Summary of Simultaneous Regression Analysis for Behavioral Health Variables Predicting Change in Embarrassed/Ashamed Item

Variable	<i>B</i>	<i>SE B</i>	β	<i>p</i>
CES-D	.024	.014	.198	.094
BAI	-.004	.013	-.039	.744
# of Alcoholic Drinks in the Last Week	.000	.014	-.003	.979

Perceived Stigma Component regression model. The second model predicted the change in the Perceived Stigma Component from baseline to 6-months using the change scores of the CES-D, BAI, and frequency of alcohol use (change from baseline to 6-months). Simultaneous complete multiple regression was used, meaning that all independent variables were entered into the equation at once. Results indicate that multicollinearity was not a problem in this analysis as evidenced by the small strength correlations between the independent variables and the acceptable tolerance levels. The regression model had an R^2 value of .003, meaning it accounted for only 0.3% of the variance in the dependent variable, and was not significant (see Table 22). These results indicate that changes in the levels of depression, anxiety, and frequency of drinking variables were not significantly associated with changes in Perceived Stigma levels.

Table 22.
Summary of Simultaneous Regression Analysis for Behavioral Health Variables Predicting Change in the Perceived Stigma Component

Variable	<i>B</i>	<i>SE B</i>	β	<i>p</i>
CES-D	.003	.013	.025	.833
BAI	-.004	.012	-.041	.729
# of Alcoholic Drinks in the Last Week	-.005	.013	-.039	.713

Comfort Level Component regression model. The third model predicted the change in the Comfort Level Component from baseline to 6-months using the change scores of the CES-D, BAI, and frequency of alcohol use (change from baseline to 6-months). Simultaneous complete multiple regression was used, meaning that all independent variables were entered into the equation at once. Results indicate that multicollinearity was not a problem in this analysis as evidenced by the small strength correlations between the independent variables and the acceptable tolerance levels. The regression model had an R^2 value of .028, meaning it accounted for only 2.8% of the variance in the dependent variable, and was not significant (Table 23). These results indicate that changes in the levels of depression, anxiety, and frequency of drinking variables were not significantly associated with changes in stigma levels.

Table 23.
Summary of Simultaneous Regression Analysis for Behavioral Health Variables Predicting Change in the Comfort Level Component

Variable	<i>B</i>	<i>SE B</i>	β	<i>p</i>
CES-D	.020	.014	.174	.141
BAI	-.002	.012	-.020	.864
# of Alcoholic Drinks in the Last Week	-.006	.014	-.045	.668

In order to further examine the relationship between feelings of stigma and change in behavioral health outcomes over time, a second set of complete regression models were completed. The following variables were included in a simultaneous

multiple regression analysis to examine the relationship between baseline level of stigma and change in behavioral health variables from baseline to 6-months: CES-D, BAI, and the frequency of alcohol use. These items were asked of the most participants therefore decreasing the incidence of missing responses. Because the Embarrassed/Ashamed Item contains items that overlap with the other two stigma items, it was not included in the models. Two stigma items, the baseline Perceived Stigma Component and the baseline Comfort Level Component, were used to predict the behavioral health items.

Change in CES-D. The first model predicted the change in CES-D scores from baseline to 6-months using the baseline scores of the Perceived Stigma and Comfort Level Components. Simultaneous complete multiple regression was used, meaning that all independent variables were entered into the equation at once. Results indicate that multicollinearity was not a problem in this analysis as evidenced by the small strength correlations between the independent variables and the acceptable tolerance levels. The regression model had an R^2 value of .013, meaning it accounted for only 1.3% of the variance in the dependent variable, and was statistically significant ($p = .002$; see Table 24). These results indicate that lower Comfort Level scores at baseline (indicating less comfort) would predict a worsening of depressive symptoms over time as measured by the CES-D. However, these results should be interpreted with caution because the associations may not be strong enough to be considered meaningful.

Table 24.
Summary of Simultaneous Regression Analysis for Variables Predicting Change in the CES-D

Variable	<i>B</i>	<i>SE B</i>	β	<i>p</i>
Baseline Perceived Stigma Component	-.819	.412	-.065	.047
Baseline Comfort Level Component	-1.227	.386	-.104	.002

Change in BAI. The second model predicted the change in BAI scores from baseline to 6-months using the baseline scores of the Perceived Stigma and Comfort Level Components. Simultaneous complete multiple regression was used, meaning that all independent variables were entered into the equation at once. Results indicate that multicollinearity was not a problem in this analysis as evidenced by the small strength correlations between the independent variables and the acceptable tolerance levels. The regression model had an R^2 value of .000, meaning it accounted for none of the variance in the dependent variable, and was not significant (Table 25). These results indicate that baseline levels of stigma were not significantly associated with changes in BAI scores.

Table 25.

Summary of Simultaneous Regression Analysis for Variables Predicting Change in the BAI

Variable	<i>B</i>	<i>SE B</i>	β	<i>p</i>
Baseline Perceived Stigma Component	.061	.804	.004	.940
Baseline Comfort Level Component	-.280	.753	-.021	.710

Changes in number of drinks. The third model predicted the change in the number of alcoholic drinks in the past week from baseline to 6-months using the change scores of the Perceived Stigma and Comfort Level Components. Simultaneous complete multiple regression was used, meaning that all independent variables were entered into the equation at once. Results indicate that multicollinearity was not a problem in this analysis as evidenced by the small strength correlations between the independent variables and the acceptable tolerance levels. The regression model had an R^2 value of .001, meaning it accounted for only 0.1% of the variance in the dependent variable, and was not significant (Table 26). These results indicate that baseline levels of stigma were not significantly associated with changes in the number of alcoholic drinks consumed.

Table 26.
Summary of Simultaneous Regression Analysis for Variables Predicting Change in the Number of Drinks

Variable	<i>B</i>	<i>SE B</i>	β	<i>p</i>
Baseline Perceived Stigma Component	.412	.470	.037	.381
Baseline Comfort Level Component	.006	.441	.001	.990

Research Question Four: Assuming level of stigma does change over time, what variables are related to change over time?

As the analysis for Research Question Three demonstrated, level of stigma as measured by Embarrassed/Ashamed Item and the Perceived Stigma Component did indeed improve over time for the total sample. To answer this research question, complete simultaneous multiple regression was performed to predict change in level of stigma (Time 1 – Time 3) by past behavioral health service use, number of PRISM-E treatment sessions attended, satisfaction with PRISM-E services, cultural competence of PRISM-E services, diagnosis, and the model of assignment. Also included is a variable to control for any influence by site (VA/Non-VA).

Simultaneous complete multiple regression was used for the first model, predicting change in the Embarrassed/Ashamed Item, meaning that all independent variables were entered into the equation at once. Results of the analysis show that multicollinearity was not problematic as evidenced by the small strength correlations between the independent variables. The regression model had an R^2 value of .024, meaning it accounted for only 2.4% of the variance in the dependent variable, and was not significant (Table 27). These results indicate that past behavioral health service use, number of PRISM-E treatment sessions attended, satisfaction with PRISM-E services,

cultural competence of PRISM-E services, diagnosis, and the model of assignment were not significantly associated with changes in stigma levels.

Table 27.
Summary of Simultaneous Regression Analysis for Variables Predicting Change in Embarrassed/Ashamed Item

Variable	<i>B</i>	<i>SE B</i>	β	<i>p</i>
Past treatment for depression (0 = No, 1 = Yes)	-.255	.219	-.084	.246
Outpatient MH visits in the past 3 months (0 = No, 1 = Yes)	-.053	.738	-.005	.943
Outpatient SA visits in the past 3 months (0 = No, 1 = Yes)	-.690	1.642	-.028	.675
Number of PRISM-E sessions attended	.004	.028	.011	.876
Satisfaction with PRISM-E services	.279	.157	.125	.076
Cultural competence of PRISM-E services	-.040	.129	-.022	.758
Depression diagnosis (0 = No, 1 = Yes)	-.537	1.774	-.158	.762
Anxiety diagnosis (0 = No, 1 = Yes)	-.680	1.667	-.206	.684
At-risk drinking diagnosis (0 = No, 1 = Yes)	-.529	1.758	-.163	.764
Depression and At-Risk Drinking diagnosis (0 = No, 1 = Yes)	.474	1.683	.081	.778
Anxiety and At-Risk Drinking diagnosis (0 = No, 1 = Yes)	.195	.841	.022	.817
Depression and Anxiety diagnosis (0 = No, 1 = Yes)	.540	1.656	.156	.745
Assigned Treatment Model (0 = Integrated, 1 = Referral)	-.008	.196	-.003	.966
VA site (0 = Non-VA Site, 1 = VA Site)	-.154	.212	-.052	.467

Simultaneous complete multiple regression was used in the second model, predicting change in the Perceived Stigma Component, meaning that all independent variables were entered into the equation at once. Results of the analysis show that multicollinearity was not problematic as evidenced by the small strength correlations between the independent variables. The regression model had an R^2 value of .051, meaning it accounted for only 5.1% of the variance in the dependent variable, and was not significant (see Table 28). These results indicate that past behavioral health service use, number of PRISM-E treatment sessions attended, satisfaction with PRISM-E

services, cultural competence of PRISM-E services, diagnosis, and the model of assignment were not significantly associated with changes in stigma levels.

Regression analysis was not performed to examine change over time for the Comfort Level Component because previous analyses showed that it did not significantly change over time.

Table 28.
Summary of Simultaneous Regression Analysis for Variables Predicting Change in Perceived Stigma Component

Variable	<i>B</i>	<i>SE B</i>	β	<i>p</i>
Past treatment for depression (0 = No, 1 = Yes)	-.214	.195	-.078	.272
Outpatient MH visits in the past 3 months (0 = No, 1 = Yes)	-.027	.656	-.003	.967
Outpatient SA visits in the past 3 months (0 = No, 1 = Yes)	-.108	1.460	-.005	.941
Number of PRISM-E sessions attended	-.001	.025	-.002	.976
Satisfaction with PRISM-E services	-.168	.139	-.083	.230
Cultural competence of PRISM-E services	-.229	.115	-.140	.047
Depression diagnosis (0 = No, 1 = Yes)	-.896	1.578	-.292	.570
Anxiety diagnosis (0 = No, 1 = Yes)	-.777	1.482	-.262	.600
At-risk drinking diagnosis (0 = No, 1 = Yes)	-.859	1.563	-.293	.583
Depression and At-Risk Drinking diagnosis (0 = No, 1 = Yes)	.724	1.496	.138	.629
Anxiety and At-Risk Drinking diagnosis (0 = No, 1 = Yes)	.361	.748	.045	.630
Depression and Anxiety diagnosis (0 = No, 1 = Yes)	.528	1.472	.169	.720
Assigned Treatment Model (0 = Integrated, 1 = Referral)	.071	.175	.027	.686
VA site (0 = Non-VA Site, 1 = VA Site)	.144	.188	.054	.446

Chapter Four

Discussion

The primary goals of this study were to investigate the usability of the PRISM-E Stigma Assessment instrument and to examine the relationship between feelings of stigma on behavioral health variables among a sample of older adults with depressive disorders, anxiety disorders, and at-risk drinking behaviors. Secondary goals were to examine if feelings of stigma changed over time and if so, to identify which variables influenced that change. These goals were accomplished by conducting a secondary analysis of data collected through the Primary Care Research in Substance Abuse and Mental Health for the Elderly (PRISM-E) study.

Over half of the sample indicated that they would be embarrassed or ashamed if they had a mental health problem and over two-thirds responded that they would be embarrassed if they had an alcohol abuse problem. These findings are disconcerting because the sample is comprised only of older adults with behavioral health disorders. In general, females were more likely than males to indicate that they had feelings of stigma associated with mental health issues as were White Non-Hispanics when compared to other racial/ethnic groups. Married respondents, as well as respondents from non-VA sites were more likely to indicate having feelings of stigma associated with behavioral health problems.

Several different methods were used to determine the reliability of the Stigma Assessment Scale indicate that several problems exist with the instrument. An examination of the scaling of the measure indicates flaws with the response categories in that the categories are measuring frequency when the categories should be measuring amount and do not represent approximately equal intervals. Further investigations using inter-item and inter-total correlations, SPSS reliability analysis, and an exploratory factor analysis revealed that the Stigma Assessment Scale is multidimensional, which means that it is assessing more than one construct of stigma. Therefore, results indicate that the items of the scale should not be aggregated to form one total score. The exploratory factor analysis revealed the presence of two factors: one measuring what we call Perceived Stigma and another measuring what we call Comfort Level, referring to the respondents' level of comfort in discussing behavioral health issues with a professional healthcare provider. It is unclear why the authors of the PRISM-E study chose to develop and use this particular instrument when there are several other validated measures of perceived stigma available (Kanter et al., 2008; Link et al., 1989; Vogel et al., 2006; Wahl, 1999).

While the reliability of the instrument was questionable, these findings were used to create the three measures of stigma used in the remaining analyses: (a) Embarrassed/Ashamed Item, comprised of Item 1 or 2, depending on the diagnosis of the respondent, (b) Perceived Stigma, comprised of the Embarrassed/Ashamed Item, and Items 3, 4, and 7, and (c) the Comfort Level Component, comprised of Items 5 and 6.

Research Question One: What demographic and behavioral health variables are associated with level of stigma at baseline?

Results from a series of correlations pairing each of the three baseline stigma measures (Embarrassed/Ashamed, Perceived Stigma, and Comfort Level) and the behavioral health measures indicate small correlations. Most notable, two measures of depressive symptoms (MINI Major Depression and the CES-D) had two of the higher correlations found with the Embarrassed/Ashamed Item (.117 and .162, respectively). These findings indicate that respondents exhibiting depressive symptoms at baseline also had higher levels of feelings of embarrassment and shame about behavioral health disorders. In addition, scores on the CES-D were correlated with the Perceived Stigma Component at $r = .169$, indicating that those respondents with higher levels of depressive symptoms also reported feeling higher levels of perceived stigma at baseline.

Two measures of alcohol use (Number of alcoholic drinks consumed in the last week and S-MAST-G) had higher levels of correlations with the Comfort Level Component (-.129 and .120 respectively). These findings seemingly contradict each other, indicating that as the risk for alcohol misuse increases as measured by the S-MAST-G, the respondents level of comfort in talking with a professional health care provider increases as well. However, as the number of alcoholic drinks consumed in the last week increases, the respondents level of comfort decreases. Although this finding could be interpreted to mean that as the number of alcoholic drinks in the last week decreases (indicating the respondent may have a mental health problem instead of an at-risk alcohol use diagnosis), their level of comfort increases.

A series of three regression models were constructed to further examine the relationship between baseline levels of stigma and baseline behavioral health variables. However, all three models yielded non-significant results, indicating that age, race/ethnicity, gender, baseline levels of depression, anxiety, and frequency of drinking were not significantly associated with baseline stigma levels.

Research Question Two: Does level of stigma change over the three time points? Does change vary according to engagement?

The three stigma measures (Embarrassed/Ashamed, Perceived Stigma, and Comfort Level) were examined using repeated measures analysis of variance (ANOVA) techniques to determine if they changed significantly over time. Two of the three measures (Embarrassed/Ashamed and Perceived Stigma) showed statistically significant improvement over time. The third measure (Comfort Level) showed a trend toward improvement over time, but this trend was not statistically significant.

The variables of engaged/not engaged (as defined as attending one or more treatment sessions) and type of service delivery model (integrated/enhanced referral model) were added to the analyses, resulting in a series of mixed design ANOVAs. There were no significant differences in the change in level of stigma over time between the engaged and not engaged groups, or the enhanced referral and integrated model groups. The findings indicate that while some facets of stigma significantly changed over time, those changes were not influenced by engagement or model type.

To further examine the issue of level of stigma at baseline and engagement, a Pearson correlation was conducted pairing the three baseline stigma measures and with the number of treatment sessions attended. Very small correlations (all below .008)

indicate that there was no association between baseline feelings of stigma and number of treatment sessions attended.

Hypothesis One

Previous literature has suggested that co-locating primary care and behavioral health providers has been successful in improving patient treatment adherence, satisfaction with care, and psychological symptoms (Bartels et al., 2004; Gallo et al., 2004; Katon et al., 1997). Other researchers have found that patients may be more comfortable seeing a behavioral health specialist located within their primary care physicians office who can work closely with their own physician (Speer & Schneider, 2003). However, this hypothesis was not supported. Results showed that feelings of stigma decreased for groups assigned to both models of treatment.

Research Question Three: What is the relationship between change in stigma and change in behavioral health variables over time?

In order to explore this question, change scores were calculated for the three stigma items (Embarrassed/Ashamed, Perceived Stigma, and Comfort Level) and the behavioral health variables from Baseline to 6-months after baseline. Results from a series of correlations pairing the stigma item change scores with the behavioral health variables change scores indicate that most (with two exceptions) correlations were small according to Cohen's guidelines (1988). Of note, two measures of depressive symptoms MINI Major Depression Scale and CES-D) had two higher correlations with both the Embarrassed/Ashamed Item, at .118 and .179 respectively. These findings indicate that as feelings of depression improved, so did feelings as stigma as measured by the Embarrassed/ Ashamed Item. Interestingly, these same two measures of depression also

had two of the higher correlations with Comfort Level at .174 and .159, respectively. In this case, due to the directionality of the scaling, these correlations indicate that as depressive symptoms improve over time, feelings of comfortableness in speaking with a professional decrease.

These results indicate that changes in the levels of depression, anxiety, and frequency of drinking variables were not significantly associated with changes in the Embarrassed/Ashamed Item.

A series of three regression models were conducted to further examine the relationship between change in levels of stigma and change in behavioral health variables over time. However, all three models yielded non-significant results, indicating that changes in the levels of depression, anxiety, and frequency of drinking variables were not significantly associated with changes in stigma levels.

A second series of three regression models were conducted to further examine the relationship between baseline levels of stigma and change in behavioral health variables over time. However, two of the three models yielded non-significant results, indicating that changes in the levels of depression, anxiety, and frequency of drinking variables were not significantly associated with baseline stigma levels. The model predicting change in CES-D scores over time by baseline stigma levels was statistically significant; however the model only accounted for 1.3% of the variance. Results indicate that baseline level of stigma, particularly Comfort Level, can predict a small amount of the variance associated with depressive symptoms. As baseline comfortableness decreases, depressive symptoms worsen over time.

Hypothesis Two

It was predicted that as feelings of stigma improve over time, behavioral health outcomes would also improve over time. Although the current research study can not determine causality, it was believed that those variables would have a positive relationship. However, the results did not support this hypothesis. There was no relationship found between change in stigma levels over time and change in behavioral health variables over time.

Research Question Four: Assuming level of stigma does change over time, what variables are related to change over time?

As was demonstrated in Research Question Three, level of stigma did indeed change over time in this sample. Regression models determined that past behavioral health service use, number of PRISM-E treatment sessions attended, respondent satisfaction with PRISM-E services, respondent rating of the cultural competence of PRISM-E services, diagnosis, and the model of assignment were not significantly associated with changes in stigma levels.

Hypothesis Three

Based on previous literature (Rusch et al., 2005; Sirey et al., 2001), it was predicted that respondents with lower levels of feelings of stigma at baseline would demonstrate greater improvements in behavioral health outcomes over time. Some support was found for this hypothesis. A significant relationship was found between baseline level of Comfort Level and depressive symptoms as measured by the CES-D. Higher levels of comfortableness at baseline predicted improvements in depressive

symptoms. However, the remaining two analyses examining this relationship were not significant.

Conclusions

Research has demonstrated that certain attitudinal characteristics have an impact on a person's responsiveness to behavioral health treatment. Along with receiving quality treatment, remaining in treatment and adherence to treatment regimens are important factors in improving behavioral health problems. Those who have a negative attitude toward mental health services are more likely to drop out of treatment than those with a more positive attitude (Bambauer & Prigerson, 2006; Edlund et al., 2002). Conversely, those patients who report being satisfied with their mental health care are more likely to attend more treatment sessions than those who are less satisfied (Chen et al., 2006; Komiti et al., 2006).

One important barrier to the receipt of needed behavioral health treatment is perceived stigma. Perceived stigma has been linked with treatment discontinuation in older adults (Sirey et al., 2001), as well as lower levels of quality of life among older adults (Depla, de Graaf, van Weeghel, & Heeren, 2005). This dissertation sought to explore the relationships between attitudinal characteristics such as perceived stigma and behavioral health outcomes.

Most research in this field has focused on perceived stigma as a barrier to accessing services or as a barrier to treatment adherence. Few studies have examined the impact of perceived stigma on behavioral health outcomes. Although the effects of stigma are far-reaching, the majority of the results from this study do not support a link between feelings of stigma and behavioral health outcomes. There was limited support

for a link between feeling comfortable discussing problems with a provider and improvement in depressive symptoms; however, the relationship may not be strong enough to be considered meaningful.

Explorations of associations between perceived stigma and other attitudinal variables, such as satisfaction with care and cultural competence ratings, did not reveal any meaningful relationships. In addition, no meaningful relationships were found between feelings of stigma and demographic characteristics, such as age, race/ethnicity, gender, and military status (VA/Non-VA).

Feelings of stigma did change over time, indicating that it is a transient state of being versus a permanent character trait. Few research studies have examined the persistence of perceived stigma in a person over time. The research in this dissertation illustrates that it is possible for a person's level of perceived stigma to change over a relatively short time frame. Interventions aimed at reducing a persons' feelings of perceived stigma may be successful in motivating people to seek help and engage in treatment, therefore reducing the costs associated with untreated behavioral health problems and improving the quality of life of many older adults.

Limitations

One main consideration for the lack of significant results found in this secondary analysis concerns the measurement item. Examinations of the Stigma Assessment Scale revealed several problems related to its structure, questioning its reliability and the identification of two factors, indicating that the instrument was measuring at least two different aspects of stigma (Perceived Stigma and Comfort Level). The inclusion of a validated measure of stigma may have potentially been more sensitive in finding

associations between feelings of stigma and behavioral health, attitudinal, and demographic characteristics. However, this illustrates the major problem with conducting secondary data analysis: the research design (including the measures) does not always dovetail precisely with the research questions of the secondary study.

In addition, the measurement of perceived stigma is a complex task. As pointed out by Link and colleagues (2004), the various conceptualizations of stigma have led to a diverse lot of instruments from which researchers can choose. As with other attitudinal measures, it can be difficult to establish the validity of such instruments.

Other limitations for the current research are related to the design of the PRISM-E study as it relates to the current analyses. The goal of the original study was to examine two types of service delivery methods. In general, no restrictions were placed on the types of treatments offered to participants. While data were collected regarding the general type of treatment (e.g., psychotherapy, medication management), who provided that therapy (e.g., psychiatrist, psychologist), and the number of treatment sessions attended, the details about treatment and fidelity to a treatment model were not measured. Therefore the quality of the behavioral health treatments provided is unknown.

In addition, the current study focused on the 2,022 respondents who agreed to receive behavioral health treatment and participate in the PRISM-E study. This group of participants may differ in a number of ways from those individuals who declined to participate in the study. Namely, those who declined may have greater feelings of stigma which have a greater influence over their behavioral health treatment choices than those who agreed to participate in the study. If this occurred, the sample would be biased toward those whose feelings of stigma have less of an impact on their behavioral health

care utilization. Stigma may be more of a barrier to treatment for those who declined to participate in the study than for those who agreed to participate. Further, respondents' history of behavioral health treatment was not captured beyond the three months prior to the onset of the study. Previous experience with the behavioral health system can influence feelings of perceived stigma as well as willingness to engage in treatment and response to treatment.

Future Directions

Perceived stigma has been in the crosshairs of recent reports from the Surgeon General (1999), the World Health Organization and the World Psychiatry Organization (2003), and SAMHSA (2005). These reports, as well as the plethora of research articles linking perceived stigma as a barrier to receiving behavioral health treatment, all highlight the complexity and far-reaching effects of negative stereotypes about people with behavioral health problems.

There is hope for the future. With the spotlight trained on the detrimental effects of the stigmatization of behavioral illnesses, one can hope that these issues become a matter of national importance. The development and implementation of anti-stigma campaigns including such strategies as protest, education, and contact (Rusch et al., 2005), will go a long way in reducing one of the barriers to receiving behavioral health care. WHO and WPA's report on reducing stigma aimed specifically at older adults with mental illnesses provides recommendations for the general public, the media, the corporate sector, and academia (Graham et al., 2003). SAMHSA provides strategies to overcome the barriers of stigma as well as the internet-based Resource Center to Address Discrimination and Stigma Associated with Mental Illness

(www.stopstigma.samhsa.gov). The Resource Center includes the guide “Developing a Stigma Reduction Initiative” (USDHHS, 2006).

Interventions designed to lessen the feelings of perceived stigma in an individual with behavioral health challenges will play an important part in ensuring older adults get treatment they need. Improving self-esteem and self-efficacy has also been linked to treatment access and adherence (Link et al., 2002). The co-location of behavioral health services with physical health services has been linked in the literature to lessening stigma, improving communication, and improving symptoms (Katon et al., 1997). It is important for researchers to focus on these areas, as these initiatives may help an underserved population receive needed services.

Future research endeavors to understand the complex relationship between feelings of stigma and behavioral health outcomes will add to the research base and help to reduce the impact of perceived stigma as a barrier to seeking and receiving behavioral health treatment. By raising awareness and educating the general public as well as policymakers, it is possible to break through the barrier of stigma and ensure that all older adults receive the care that they need.

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