

RACE DIFFERENCES IN MENTAL HEALTH SERVICES FOR DEPRESSION AND  
ANXIETY: TREATMENT RATES, SETTINGS, AND QUALITY AMONG WHITES,  
BLACKS, AND LATINOS IN THE COLLABORATIVE PSYCHIATRIC  
EPIDEMIOLOGY SURVEYS

by

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## ABSTRACT OF THE DISSERTATION

Race differences in mental health services for depression and anxiety: Treatment rates, settings, and quality among whites, blacks, and Latinos in the Collaborative Psychiatric Epidemiology Surveys

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**BACKGROUND:** As the racial composition of the U.S. population grows ever more diverse, landmark healthcare legislation holds the promise of reducing long-standing race disparities in health.

**OBJECTIVES:** This study examines Latino- and black-white differences in 12-month rates of mental health (MH) service use, the specific settings in which services are received, and the adequacy of the services rendered. It focuses specifically on care for depression and anxiety disorders, the two most common forms of mental illness in the U.S.

**DATA:** Data are from the Collaborative Psychiatric Epidemiology Surveys (CPES) project, which combined three representative surveys of mental health and MH service use among American adults. Focused on the influence of race and ethnicity, CPES component surveys oversampled nonwhite respondents. Core diagnostic assessment was completed using the Composite International Diagnostic Interview (CIDI).

**METHODS:** MH service use included use of any of five sectors: psychiatry (PSY), other mental health specialty (OMH), general medical (GM), human services (HS), and complementary-alternative medicine (CAM). Multi-sector service profiles included PSY, OMH with GM, OMH-only, GM-only, HS-only, and CAM-only. Adequate care was defined as psychotherapy (i.e., eight or more visits to psychiatrist or other MH specialist lasting at least 30 minutes) and/or pharmacotherapy (i.e., four or

more visits to psychiatrist or other physician plus use of suitable prescription medication for at least 60 days).

RESULTS: Latinos and blacks were less likely than whites to receive any services. Compared to whites, black service users were less likely to use the GM-only profile and more likely to use the HS-only profile. Among service users with depression and anxiety disorders, blacks were less likely than whites to receive adequate psycho- or pharmacotherapeutic services. Among those reporting use of prescription medications, both blacks and Latinos were more likely than whites to have taken medications other than those recommended for their particular disorders.

CONCLUSIONS: Each year, many depressed and anxious Americans go undertreated or untreated altogether, and these shortfalls are more pronounced among Latinos and especially blacks than among whites. Future research should investigate the influence of race differences in self-perceived need and beliefs and attitudes about mental health and mental healthcare.



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## DEDICATION

To Bunny

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## Chapter 1: Introduction

### BACKGROUND

Anxiety and depression represent the first and second most common forms of mental disorder in the United States today (Kessler & Wang, 2008). While they are generally not as disabling and debilitating as the most serious mental illnesses, such as schizophrenia or bipolar disorder, depression and anxiety disorders nevertheless take a significant toll on the afflicted individuals, their families, and society as a whole (Jacob et al., 1987; Fadden, Bebbington & Kuipers, 1987; Druss, Rosenheck & Sledge, 2000; Roy-Byrne et al., 2000; Lecrubier, 2001). Since the 1980s, nationally representative community mental health surveys have provided valuable data on treatment for these disorders and have consistently documented steady increases in treatment rates (Robins & Regier, 1991; Kessler et al., 1999, 2004). However, even recent surveys have found that, despite the existence of many effective treatment modalities, treatment rates remain low (Kessler et al., 1999, 2004; Wang et al., 2005), and much of the care rendered to those who do seek it falls short of established treatment guidelines (Katz et al., 1998; Wang, Demler & Kessler, 2002; Wang et al., 2005, 2007). Presented in Figure 1.1, data from the National Comorbidity Survey Replication (NCS-R) show that, in a given year, great numbers of individuals with depression and anxiety disorders are undertreated and even greater numbers go untreated altogether (Wang et al., 2005).

The dilemmas of un- and undertreated mental health problems are even more evident among blacks and Latinos. They are not only frequently found to be underrepresented among users of mental health services (Ruiz, 2002; Cabassa, Zayas & Hansen, 2006; Cook, McGuire & Miranda, 2007; Dobalian & Rivers, 2008), but, even among service users, they are sometimes found to receive poorer care than their white counterparts (Fortney et al., 1999; Wang, Demler & Kessler, 2002; Alegria et al., 2008).<sup>1</sup> Since both blacks and Latinos are also overrepresented among vulnerable populations, including the homeless and the incarcerated, proven to suffer from mental health problems at elevated rates, they necessarily carry a grossly disproportionate share of the nation's

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<sup>1</sup> Although they are not included in my analyses, Asians have also been found to be less likely than comparable whites to use mental health services (Abe-Kim et al., 2007) and to receive adequate care (Alegria et al., 2008).

burden of untreated and undertreated mental illness (even if this disproportionateness is underestimated by most epidemiological studies, sampling non-institutionalized adults in U.S. households).

Research on race disparities in mental health treatment patterns is especially timely for two reasons. First, as shown in Figure 1.2, the U.S. is in the midst of a significant demographic shift. Racial/ethnic minorities already make up a third of the population and are projected to make up a full half by 2050 (U.S. Census Bureau, 2004, 2007).<sup>2</sup> If the racial/ethnic composition of the population shifts as expected and nothing is done to close the white-nonwhite treatment gap, the aforementioned gains in improving treatment rates will be reversed, and aggregate rates of untreated mental illness will rise, not fall. Second, recent healthcare legislation, including the Mental Health Parity and Addiction Equity Act (MHPAEA, 2008) and the latest Patient Protection and Affordable Care Act (PPACA, 2010),<sup>3</sup> holds the promise of improved access to mental health services. The time is right for a better understanding of mental health treatment gaps and a concerted effort to close them.

I begin this brief introduction with the definition of mental health service use utilized in most health services research, along with a note on inpatient treatment. Subsequently, I lay out the major aims of this dissertation, and finish with a description of the data I use in analyses intended to address those aims.

## **MENTAL HEALTH SERVICE USE**

Mental health services studies generally recognize several venues for mental health treatment, including the mental health specialty, general medical, human services, and complementary-alternative medicine sectors.

Perhaps the most conventional treatment setting is the *mental health specialty (MHS) sector*, which is frequently subdivided into the psychiatry (PSY) and other mental health specialty (OMH)

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<sup>2</sup> These include Hispanics (of any race), blacks, Asians, native Hawaiians and other Pacific Islanders, American Indians and native Alaskans, and others (.2%) (U.S. Census Bureau, 2007).

<sup>3</sup> The PPACA was subsequently amended by the Health Care and Education Reconciliation Act (HCERA, 2010).

sectors. Non-psychiatrist mental health specialists include psychologists, other mental health professionals such as psychotherapists, and counselors and social workers in mental health settings (e.g., private practices, psychiatric outpatient clinics, drug/alcohol treatment programs), as well as calls to mental health hotlines.<sup>4</sup>

However, individuals can also receive mental health services in other settings, including the *general medical (GM) sector*, which consists of primary care physicians (PCPs), other non-psychiatrist MDs, and non-MD health professionals. In fact, it is the GM sector that has played by far the biggest part in recent decades' steady rise in rates of mental health treatment (Kessler et al., 2005; Uebelacker et al., 2006; Kessler, Merikangas & Wang, 2007). This expansion is a function of several factors. First, the rise of managed care has put much emphasis on primary care, with triage of only severe cases to specialists (Ustün & Sartorius, 1993). This has led to an increase in psychotherapy provided directly by PCPs (Olfson et al., 2002). Perhaps more importantly, the market has been steadily flooded with increasingly safer and more effective antidepressants and other psychotropic medications, enabling PCPs to provide mental health treatment even in the absence of psychotherapy (e.g., Gorman & Kent, 1999; Nutt, 2005; Hoffman & Mathew, 2008).

Together the MHS and GM sectors constitute the healthcare cluster, which provides the majority of mental health services rendered to American adults. Yet, for a wide range of reasons, individuals sometimes seek services in non-healthcare settings as well. In the *human services (HS) sector*, such services are often provided by religious and spiritual advisors, but they can also be provided by counselors and social workers in non-mental health settings (e.g., hospital emergency rooms, social service agencies, prisons). In the *complementary-alternative medicine (CAM) sector*, individuals can call on a variety of healers, such as chiropractors and acupuncturists, but they can also participate in self-help and Internet support groups which often involve no professional facilitator.

While many studies combine care in all sectors into a single indicator of mental health service use, some investigate use of specific sectors separately or scrutinize the quality of received

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<sup>4</sup> Some studies exclude use of a mental health hotline (e.g., Kessler, Merikangas & Wang, 2007).

services. Since a single individual can receive mental health services in multiple sectors, these studies generally use a series of yes/no indicators, one for each of the sectors included in the analyses. In terms of quality, though precise operationalizations vary, the adequacy of psychotherapy is typically evaluated on the basis of the number and sometimes duration of sessions. The adequacy of pharmacotherapy, in turn, is based primarily on the appropriateness of the medication and the duration of its trial, though it sometimes also incorporates considerations of dosage as well as number of doctor visits.

#### **A NOTE ON INPATIENT TREATMENT**

Importantly, individuals sometimes receive mental health treatment in inpatient settings as well. Moreover, these are the only settings in which minorities – namely, blacks – are overrepresented. In fact, blacks are more likely than whites to show up in psychiatric emergency rooms (Hu et al., 1991; Chow, Jaffee & Snowden, 2003), to be brought there by the police (Rosenfield, 1984), to be hospitalized and re-hospitalized (Leginski et al., 1990; Snowden & Cheung, 1990; Breau & Ryujin, 1999), and to be hospitalized involuntarily (Lindsey & Paul, 1989; Takeuchi & Cheung, 1998).

A recent review presents a number of compelling explanations but emphasizes the scarcity of empirical assessment of their explanatory power (Snowden, Catalano & Shumway, 2009). Some of the proposed theories highlight the role of race differences in access to outpatient care and in the quality of the outpatient care rendered to those who do receive it. These suggest that blacks' overrepresentation in the often suboptimal emergency and inpatient settings may be a function of the failure of the outpatient mental healthcare system. Thus, while I do not include inpatient care in my analyses, my findings regarding race differences in patterns of the presumably more discretionary outpatient care may come with implications for the full gamut of mental health treatment settings.

#### **AIMS**

In the broadest terms, my dissertation analyzes race differences in several aspects of mental health service use, including use of any services, the settings in which services are sought, and the

quality of the services provided in those settings. To do so, it focuses on the 12-month period immediately prior to interview, the period for which relevant data are richest. It is intended to capture and present a clearer picture of the complex relationship between race and mental health service use and, ultimately, to produce constructive recommendations for policy and practice.

### **AIM 1**

First, I examine race differences in the use of any of the aforementioned outpatient mental health services within the 12 months prior to interview. Since many analyses of outpatient service use in large, nationally representative survey samples have already found Latinos and especially blacks to be less likely than comparable whites to report such use (e.g., Robins & Regier, 1991; Ojeda & McGuire, 2006; Cook, McGuire & Miranda, 2007; Alegria et al., 2008; Dobalian & Rivers, 2008), I go beyond simply replicating these findings by considering the role of need for treatment and the interplay between race and need.

Epidemiological surveys that find blacks and Latinos generally have lower prevalence of many disorders might suggest it is the lower need for mental health services that accounts for lower use of them. Such an assumption would be misguided, however. In fact, while lifetime prevalence rates are consistently highest among whites, 12-month point prevalence rates tend to be much more similar among whites, blacks, and Latinos (Kessler et al., 1994; Breslau et al., 2005, 2006; Williams et al., 2007). More importantly, among individuals with 12-month disorders, blacks' and Latinos' disorders tend to be more persistent and more severe (Breslau et al., 2005, 2006; Williams et al., 2007; Himle et al., 2009; Lee, Sinkewicz & Muennig, 2010). This suggests that, in a given year, their need for treatment might actually be more pressing than whites'.

Therefore, I examine the ways in which race and disorder persistence and severity – as well as comorbidity – interact to predict use of mental health services. In other words, I intend to determine whether these three aspects of need for care affect service use differently within the three race groups.



## AIM 2

Second, among 12-month service users, I examine race differences in the settings in which individuals receive outpatient mental health services. Although their findings are more equivocal than the aforementioned findings on use of any services, many studies have already explored race differences in the use of specific service sectors. I build upon this base using a recent revision of traditional treatment sector methodology (Wang et al., 2006), modifying this novel measure and again accounting for the aforementioned multiple aspects of treatment need.

In mental health services research, the customary approach to the study of treatment sector has generally used a series of simple yes/no indicators, one for each of the sectors included in a given study, rarely accounting for the fact that many individuals receive services in multiple sectors. Recently, however, Wang et al. (2006) expanded upon these studies by moving beyond the study of individual sector use and addressed the frequent use of multiple sectors by reformulating the five indicators for each of the aforementioned sectors (PSY, OMH, GM, HS, CAM) into a single six-category measure of multi-sector treatment profile. Discussed in more detail in chapter 3, the profiles included PSY, OMH with GM, OMH-only, GM-only, HS-only, and CAM-only.

This innovative approach defined the profiles in terms of their therapeutic capacity, or their capacity to provide psychotherapy, pharmacotherapy, combination psycho- and pharmacotherapies, or none of the above. Notably, Wang et al. (2006) did not determine whether the services these profiles provided were actually consistent with established guidelines for adequate care. Instead, they followed previous studies of treatment adequacy (e.g., Wang, Demler & Kessler, 2002; Wang et al., 2005) in delineating the type(s) of therapy the providers in each sector were formally trained to deliver. The exact extent to which they delivered these therapies, however, remained an open question.

Importantly, frequent findings that combination therapy is associated with the greatest improvements (e.g., Pampallona et al., 2004; Hollon et al., 2005; de Maat et al., 2007; Cuijpers et al., 2009) point to the rank ordering embedded in the multi-sector profile measure. The two profiles that

could potentially provide combination therapy have the greatest therapeutic capacity; the two that, according to Wang et al. (2006), could not provide any therapy – the least. Considering this hierarchy, I further reformulate the six multi-sector profiles into a four-category measure of profiles' therapeutic capacity. Using this measure, I examine not only ways in which race impacts the therapeutic capacity of the providers one sees, but also ways in which race interacts with socioeconomic characteristics and treatment need in determining this therapeutic capacity.

### **AIM 3**

Third, among 12-month service users with presumed need for services – that is, active depression or anxiety disorders within the same 12-month period – I examine race differences in the quality of treatment they receive. I expand upon existing research by differentiating between disparities in treatment adequacy that result from differences in the settings in which individuals receive care and disparities that result from differences in the care they receive within similar settings.

Many studies have found blacks and Latinos tend to receive poorer mental health care than their white counterparts (e.g., Wang, Berglund & Kessler, 2000; Young et al., 2001; Wang, Demler & Kessler, 2002; Harman, Edlund & Fortney, 2004; Cabassa, Zayas & Hansen, 2006; Alegria et al., 2008; Olfson, Cherry & Lewis-Fernández, 2009). However, some of these did not restrict analyses to service users, so the fact that blacks and Latinos are less likely to receive any mental health care may have exaggerated the degree to which their care is inferior. Although studies that did restrict their analyses in this way have yielded more equivocal findings, some have certainly found blacks and Latinos less likely to receive adequate psychotherapy, pharmacotherapy, or any adequate care (e.g., Wang, Berglund & Kessler, 2000; Harman, Edlund & Fortney, 2004; Olfson, Cherry & Lewis-Fernández, 2009).

Using established operational definitions of adequacy of care, I examine whether race differences in multi-sector treatment profile and associated therapeutic capacity play a part in providing blacks and Latinos with lower quality mental health care. Additionally, I determine whether

there are race differences in the quality of mental health care individuals receive when they seek such care in similar treatment profiles with similar therapeutic capacities.

#### **AIM 4**

Taken together, these analyses are intended to provide a detailed description of race differences in patterns of mental health service use, including the types of professionals from whom individuals receive care and the quality of care these professionals provide. This description, in turn, provides a backdrop for practical recommendations, especially for policies addressing services for the many American adults burdened with depression and anxiety disorders every year.

#### **DATA**

##### **COLLABORATIVE PSYCHIATRIC EPIDEMIOLOGY SURVEYS (CPES)**

Comprised of three large surveys – the National Comorbidity Survey Replication (NCS-R), the National Latino and Asian American Study (NLAAS), and the National Survey of American Life (NSAL) – the Collaborative Psychiatric Epidemiology Surveys (CPES) dataset is well-suited to this dissertation for several reasons.

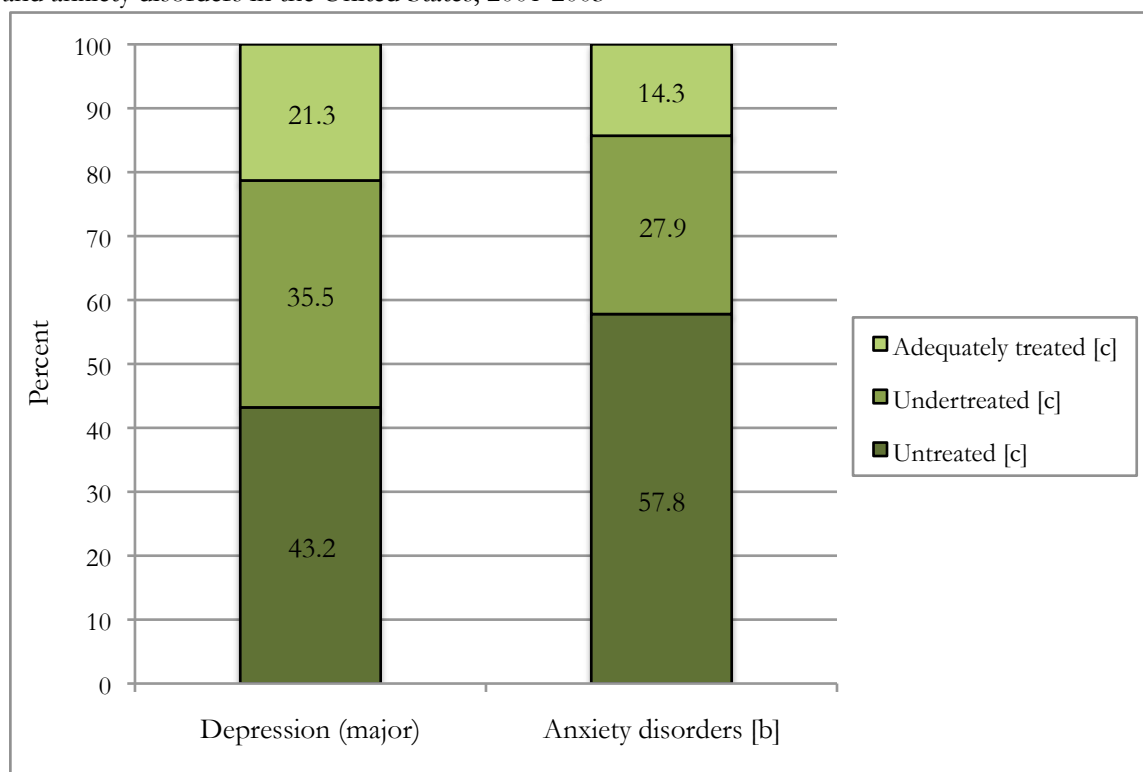
First, although it focused primarily on psychiatric epidemiology, the CPES collected extensive data on use of a wide range of mental health services. Survey items assessed not only whether respondents had received any mental health related services, but also which specific providers they had ever seen, how recently they had seen them, how many times they had seen them in the preceding 12 months, and how long these sessions/visits had lasted. Additional items collected detailed information on mental health related use of prescription medications, including specific medications taken in the preceding 12 months and the number of days (of the preceding 365) these medications were taken. This allows me to examine several important aspects of the use of mental health services.

Second, with its large number of black and Latino respondents, the CPES provides unprecedented statistical power to investigate race differences on these service use measures. The NSAL surveyed large numbers not only of African Americans but of Caribbean blacks as well,

facilitating more reliable estimates of mental health service patterns within the diverse black population. The NLAAS, meanwhile, surveyed large numbers of Latino (and Asian) Americans, including considerable subsamples of not only Mexicans and Puerto Ricans but also Cubans and other Latinos. Additionally, the NLAAS survey instrument was available in Spanish (and several Asian languages), resulting in a Latino sample that is in closer concordance with the diverse population it is intended to represent. This, too, likely leads to more reliable estimates of mental health service patterns within the rapidly expanding Latino population.

Third, intended to help researchers approach the pooled dataset as though it were a single nationally representative survey, the CPES used both a core questionnaire and Web-based cross-linked documentation. The core questionnaire was the WMH-CIDI – the World Mental Health Survey Initiative’s expanded version of the WHO’s Composite International Diagnostic Interview. This standardized psychiatric diagnostic instrument designed for administration by lay interviewers (Kessler & Üstün, 2004) generally leads to diagnoses with good concordance with independent clinical evaluations (Haro et al., 2006). For survey items not included in the comprehensive core instrument, CPES cross-linking capabilities facilitate comparison of exact text and judicious selection of variables for analysis.

Figure 1.1. Twelve-month prevalence of untreated, undertreated, and adequately treated depression and anxiety disorders in the United States, 2001-2003<sup>a</sup>

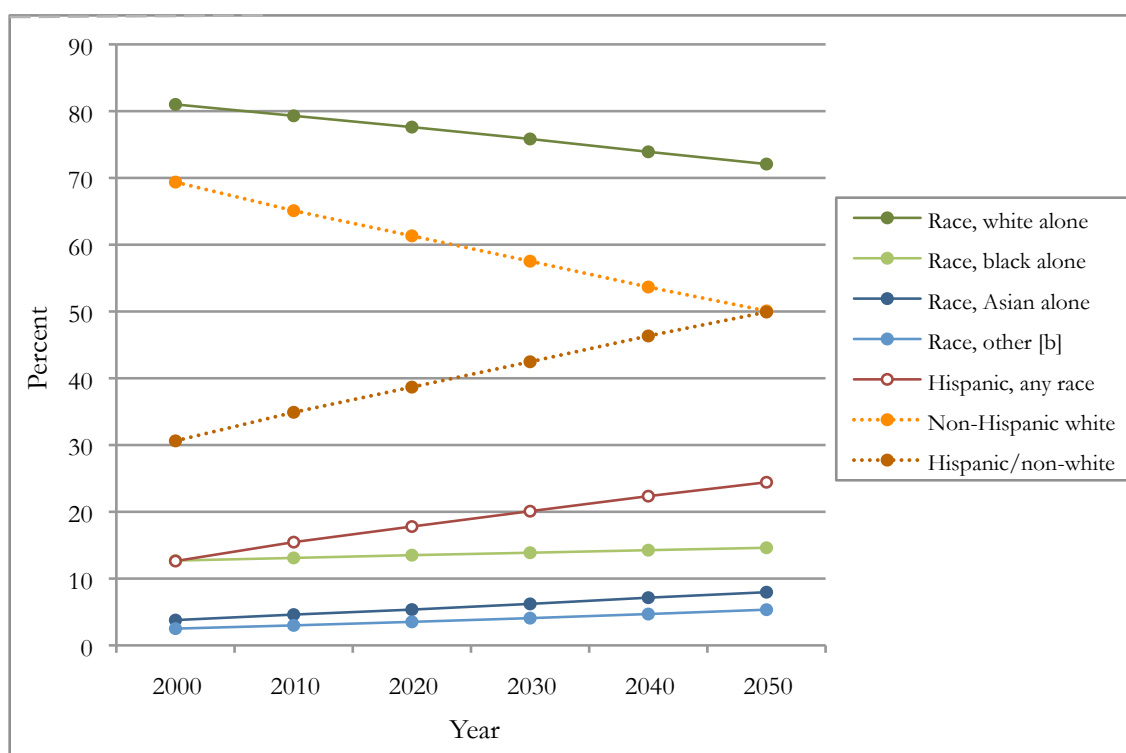


<sup>a</sup> Weighted data from NCS-R part 2; n=5692 (Wang et al., 2005).

<sup>b</sup> Anxiety disorders include panic disorder, agoraphobia, specific phobia, social phobia, generalized anxiety disorder, and posttraumatic stress disorder.

<sup>c</sup> Treatment included any outpatient mental health service use (defined on pp. 2-4) or admission to hospital or other facility.

*Adequately treated* respondents received pharmacotherapy (60+ days of an appropriate medication plus 4+ visits to any physician) or psychotherapy (8+ visits with any MHS, GM, or HS professional lasting an average of 30+ minutes). *Undertreated* respondents received treatment that fell short of these standards. *Untreated* respondents received no treatment.

Figure 1.2. Projected population of the United States, by race and Hispanic origin, 2000-2050<sup>a</sup>

<sup>a</sup> Data from the U.S. Census Bureau (2004).

<sup>b</sup> Includes American Indian and Alaska Native alone, Native Hawaiian and Other Pacific Islander alone, and two or more races.

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## **Chapter 2: Race, need for services, and mental health service use: Race disparities in the burden of untreated depression and anxiety disorders**

### **ABSTRACT**

**OBJECTIVES:** This study examines race differences in the persistence, severity, and comorbidity of depression and anxiety disorders, as well as the impact that race, the burden of these disorders, and their interactions have on 12-month rates of mental health service use.

**DATA:** This study uses data from the Collaborative Psychiatric Epidemiology Surveys (CPES) project, a representative survey of mental health and mental health service use among American adults. Due to oversampling of nonwhites, the analytic sample includes large numbers of Latino (n=2872), non-Latino black (n=4639), and non-Latino white (n=3213) respondents.

**METHODS:** Mental health (MH) service use was use of any of five service sectors: psychiatry (PSY), other mental health specialty (OMH), general medical (GM), human services (HS), and complementary-alternative medicine (CAM). Logistic regression analyses controlled for sociodemographic characteristics.

**RESULTS:** Compared to whites, Latinos and blacks generally had lower 12-month rates of depression and anxiety disorders, but their disorders tended to be more persistent and more severe. Minority race was associated with lower likelihood of service use, while degree of disorder burden was associated with higher likelihood of use. Negative effects of Latino and black race/ethnicity did not differ significantly across categories of disorder persistence, severity, and comorbidity.

**CONCLUSIONS:** Blacks and Latinos have more persistent and severe depression and anxiety disorders but lower rates of mental health service use. They bear a disproportionate share of the burden of untreated mental illness.

## INTRODUCTION

Altogether, mental disorders constitute the number one cause of adult disability in North America (WHO, 2002) and, when they are severe, cut life expectancy by 25 years (Colton & Manderscheid, 2006; Manderscheid, Druss & Freeman, 2007). As the first and second most common forms of mental disorder in the U.S., anxiety and depression take a considerable toll not only on the afflicted individuals and their families but society as a whole as well, with documented links to reduced workplace performance and absenteeism and billions of dollars in lost productivity (Fadden, Bebbington & Kuipers, 1987; Jacob et al., 1987; Druss, Rosenheck & Sledge, 2000; Roy-Byrne et al., 2000; Lecrubier, 2001; Frank & Koss, 2005; Kessler et al., 2008).

This toll is greatest when mental health problems go untreated. For example, left untreated, early onset disorders can lead to school and job failure and marital instability (Kessler et al., 1995; Kessler, Walters & Forthofer, 1998). Untreated mental disorders can also lead to self-medication, using a range of legal and illegal drugs (e.g., Kushner, Abrams & Borchardt, 2000; Harris & Edlund, 2005; Bolton et al., 2006; Bolton, Robinson & Sareen, 2009; Robinson et al., 2009). Since many of them are addictive, their use can result in discrete substance abuse disorders, aggravation of the symptoms they are meant to ameliorate, or both (Bolton et al., 2006; Tomlinson et al., 2006). In general, untreated disorders can become more severe, occur more frequently, come on more unexpectedly, and be more resistant to subsequent treatment (Kessler & Price, 1993; Post & Weiss, 1998).

Mental disorders are treatable, however. Over time, research has produced a variety of treatment options with proven efficacy in significantly reducing symptomatology and impairment. These have been especially abundant for the more common disorders of depression (e.g., Leonard, 1996; Sambunaris et al., 1997; Rush & Thase, 1999) and anxiety (e.g., Roy-Byrne et al., 1993; Bourin & Lambert, 2002; Shearer, 2007). Additionally, they have included psychosocial (e.g., Zarate & Agras, 1994; Barlow & Lehman, 1996; Bisson & Andrew, 2007) and, increasingly, pharmacological

approaches (e.g., Leonard, 1996; Sambunaris et al., 1997; Bourin & Lambert, 2002; Nutt, 2005; Stein, Ipser & Seedat, 2006; Hoffman & Mathew, 2008)

Nevertheless – and despite recent decades’ documented increases in rates of mental health treatment (Robins & Regier, 1991; Kessler et al., 1999, 2004b) – around 40% of those with depression and 60% of those with anxiety still do not seek care (Wang et al., 2005). Treatment rates are even lower among blacks and Latinos, whom studies have generally found to be greatly underrepresented in most mental health treatment settings (e.g., Ruiz, 2002; Cabassa, Zayas & Hansen, 2006; Cook, McGuire & Miranda, 2007; Dobalian & Rivers, 2008). As such, policy efforts to bridge the gap between rates of mental health problems and rates of mental health treatment need to pay particular attention to these undertreated minority groups.

In this context, I use data from the recent Collaborative Psychiatric Epidemiology Surveys (CPES) to take a closer look at race differences in rates of mental health service use for depression and anxiety, addressing three aims. First, I establish robust relationships between race and several fine-tuned measures of clinical need for treatment, on one hand, and use of mental health treatment, on the other. Third, I pick up the lead from some recent studies and examine the ways race and need for services *interact* to determine whether individuals use mental health services. In other words, I examine whether race differences in service use vary by persistence, severity, and comorbidity of disorder and, likewise, whether persistence, severity, and comorbidity of disorder affect service use differently within different race groups.

## **LITERATURE REVIEW**

I briefly review pertinent research below, focusing first on studies of the roles of need and race and then on some of the more recent studies of their intersection, along with a discussion of the ways I sought to build upon this work. I begin, however, with a review of the definition of mental health treatment used in most health services research, as well as a summary of the Andersen behavioral model of health service utilization, which has been instrumental in shaping my analyses.

## **MENTAL HEALTH TREATMENT**

As described in detail in chapter 1, mental health services research generally recognizes several venues for mental health treatment. The mental health specialty (MHS) sector is often further partitioned into psychiatrists in the psychiatry (PSY) sector and, in the other mental health specialty (OMH) sector, psychologists, psychotherapists, counselors and social workers in mental health settings, and sometimes mental health hotline operators presumed to be non-psychiatrist specialists. The general medical (GM) sector includes primary care physicians, other physicians, and other health professionals such as nurses. The human services (HS) sector includes religious and spiritual advisors, as well as counselors and social workers in non-mental health settings. Finally, the complementary-alternative medicine (CAM) sectors consists of all other healers such as acupuncturists and chiropractors, as well as self-help and Internet support groups. For the purposes of the analyses in this chapter, I drew no distinctions between these venues, and considered any care rendered in any of them to constitute mental health service use.

## **ANDERSEN MODEL**

While the Andersen model was originally developed to explain families' use of medical health services (Andersen, 1968), it has since successfully been used in studies of individuals' use of mental health services as well (e.g., Leaf et al., 1988; Padgett, Patrick & Burns, 1994; Padgett et al., 1994; Diala et al., 2000; Hines-Martin et al., 2003a, 2003b; Dobalian & Rivers, 2008; Elhai et al., 2008; Hatzenbeuhler et al., 2008; Keyes et al., 2008; Fasoli, Glickman & Eisen, 2010). In its earliest iteration, Andersen's model posited that service use is a function of (1) predisposing characteristics such as age, gender, race, and health beliefs; (2) enabling resources such as income, education, and insurance coverage; and (3) need, including (a) evaluated need, as indicated by clinical factors such as illness severity, pervasiveness, and comorbidity, and (b) perceived need, as assessed by the individual him- or herself.

Over time, the model has evolved to include the external environment (physical, political, and economic components), as well as the healthcare system itself (national health policy, resources,

and organizations). It has also incorporated health practices (diet, exercise, and self-care), which interact with service utilization to influence another added element – health outcomes (perceived and evaluated health, and patient satisfaction) – and, finally, feedback loops, wherein outcomes influence future beliefs, practices, and needs and thus future utilization (Andersen & Newman, 1973; Aday & Andersen, 1974; Andersen, 1995).

In this complex form, the updated model is almost impossible to evaluate empirically. It does, however, constitute a constructive framework for research into race differences in mental health service use, and I make use of it in this capacity. As such, in assessing interactions between race and need for treatment, I control both for other predisposing characteristics such as gender, age, and marital status and for enabling resources such as education and insurance coverage.<sup>1</sup> Proven to be significantly associated with mental health treatment (Leaf et al., 1988; Lin & Parikh, 1999), these sociodemographic characteristics are commonly included as control variables in studies of race differences in mental health service use (e.g., Alegria et al., 2002; Ojeda & McGuire, 2006; Hatzenbeuhler et al., 2008).

### **THE IMPACT OF NEED FOR TREATMENT**

Many mental health services studies have examined the role of various aspects of need for services in predicting help-seeking, finding treatment is more likely for more serious disorders, more likely for some disorders than others, more likely for multiple than for single disorders, and more likely for ongoing disorders than for those in remission.

Studies have consistently found that treatment is strongly correlated with illness severity, so that non-cases (i.e., respondents without diagnosable psychopathology) have the lowest rates, followed by those with mild, moderate, and severe disorders, respectively (Bijl et al., 2003; Kessler et al., 2004b; Kessler, Merikangas & Wang, 2007). They have also found that, in general, treatment rates are higher for mood disorders than for anxiety disorders, although some anxiety disorders are treated at rates comparable to those for mood. In the recent National Comorbidity Survey Replication

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<sup>1</sup> Preliminary analyses showed income had no impact on service use itself and the relationship between race and service use. Therefore, I did not control for it in my analyses.

(NCS-R), treatment rates were highest for dysthymic depression, followed closely by panic disorder; treatment rates for posttraumatic stress disorder (PTSD), in turn, were comparable to those for both major and bipolar depression (Wang et al., 2005). Among anxiety and mood disorders, service use was lowest for social and especially specific phobias (Wang et al., 2005).

High treatment rates for depression may be a function of the fact that, especially in its bipolar and dysthymic iterations, it is generally more severe and intrusive than anxiety (Kessler et al., 2005b). Some anxiety disorders, however, are at least as severe as major depression, and some are more so. Perhaps not surprisingly, analysis of the NCS-R found that the anxiety disorders with severity levels comparable to depression also had comparable treatment rates – that is, panic disorder and PTSD, along with separation anxiety and obsessive-compulsive disorders (for which treatment rates were not available in the 2005 Wang et al. article) (Kessler et al., 2005b). Considering these similarities between depression and some of the anxiety disorders, the latter's overall severity and service use figures must be reduced by the phobias, which combine low severity and low service use with high prevalence.<sup>2</sup>

Previous studies have also found that both severity and service use increase as a function of comorbidity, so that individuals with single disorders report less impairment and less treatment than those with multiple disorders (Kessler et al., 1997; Mojtabai, Olfson & Mechanic, 2002; Kessler et al., 2005b; Uebelacker et al., 2006). Additionally, comorbid mood and anxiety disorders are more likely to prompt treatment than either mood or anxiety coupled with substance use, though treatment rates are highest for individuals with all three types of disorders (Mojtabai, Olfson & Mechanic, 2002). Another study also highlighted the role of illness recency, finding that individuals with lifetime but not 12-month disorder histories were more likely to report treatment than individuals with no disorder histories whatsoever but less likely to do so than individuals with 12-month histories (Kessler et al., 1997).

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<sup>2</sup> For example, in data from the NCS-R, specific phobia (e.g., arachnophobia) was the single most common disorder, out of the 19 anxiety, mood, substance use, and impulse control disorders measured (Kessler et al., 2005b). However, it was also the least severe (Kessler et al., 2005a) and the one, of all mood and anxiety disorders, least likely to prompt mental health treatment (Wang et al., 2005).



Accordingly, I differentiate between respondents with no history of disorders and those whose disorders are currently in remission, but also between respondents whose 12-month disorders are new and those whose 12-month disorders constitute continuation or recurrence of long-standing illness. I expect treatment rates to be highest among respondents with persistent disorders, lower among those with recently onset disorders, lower still for those with disorders in remission, but lowest for respondents with no history of depression or anxiety. For 12-month disorders, I also draw distinctions on the basis of severity, expecting to find treatment rates to be highest for respondents with severe disorders, followed by moderate and mild disorders, respectively. Finally, I divide 12-month diagnoses into depression only, anxiety only, and comorbid depression and anxiety, and expect to find treatment rates are highest for the comorbid disorders, lower for depression, and lower still for anxiety disorders. Mindful of the influence of remitted disorders, I control for their presence in these severity and comorbidity analyses. As above, I expect higher treatment rates for respondents with some history of depression or anxiety than for those with none.

Importantly, for all three – persistence, severity, and comorbidity – it appears increased treatment rates might simply be a matter of increased self-perceived need for treatment, which has repeatedly been linked to help-seeking (Kessler et al., 1997; Mojtabai, Olfson & Mechanic, 2002). For example, studies have found that self-perceived need is correlated with the seriousness of illness and impairment (Katz et al., 1997; Kessler et al., 2001). Like severity and service use, perceived need is also higher for mood than anxiety disorders (Katz et al., 1997; Mojtabai, Olfson & Mechanic, 2002). It is generally higher for multiple than for single disorders (Katz et al., 1997; Kessler et al., 1997). Among comorbid disorders, it is higher for the combination of mood and anxiety than the combination of either mood or anxiety with substance use, although – like treatment itself – perceived need for treatment is highest among respondents with all three types of disorders simultaneously (Mojtabai, Olfson & Mechanic, 2002). Finally, it is higher for recent disorders, whether new or long-standing, than for those in remission (Kessler et al., 1997). In turn, like evaluated need, perceived need has repeatedly been linked to help-seeking (Kessler et al., 1997;

Mojtabai, Olfson & Mechanic, 2002). Although self-perceived need is an important consideration and likely accounts for a sizeable share of the overall variation in service use, however, I am not able to examine its impact in this study.

Importantly, while need is clearly a critical predictor of mental health service use, the relationship is far from perfect. In fact, large numbers of even those with both evaluated and perceived need do not seek treatment. While this is somewhat regrettable – after all, it would be ideal if individuals who by definition needed treatment actually received it – it is predictable, considering the Andersen model. While the model certainly stresses the role of need, giving it primacy over other individual-level treatment determinants, it recognizes the invaluable influence of both predisposing characteristics and enabling resources. In so doing, it suggests that treatment rates will differ not only by measures of necessity but also by measures of access (enabling resources) and inclination (predisposing characteristics), even if the latter is often measured somewhat indirectly by means of demographics. As such, it is not surprising that research has often, albeit not always, found significant race differences in rates of mental health service use, a trend I describe in more detail below.

### **THE ROLE OF RACE**

Mental health services research is not monolithic, and, on the question of the role of race, the answer has not always been unanimous. While some studies have found few or none significant race differences in use of mental health services, most of them have focused on treatment settings – namely, inpatient – in which minorities are actually often overrepresented (Snowden & Cheung, 1990; Padgett et al., 1994; Snowden, 1999; Takeuchi & Cheung, 1998; Chow, Jaffee & Snowden, 2003) or used samples that, for a variety of reasons, are unlikely to have been representative of the population at large (Padgett et al., 1994; Cooper-Patrick et al., 1999; Probst et al., 2007). Moreover, these studies have been relatively few and far between, greatly outnumbered by studies that have indeed found significant treatment gaps between blacks and Latinos on one hand and whites on the other (e.g., Hough et al., 1987; Robins & Regier, 1991; Freiman, Cunningham & Cornelius, 1994;

Swartz et al., 1998; Ruiz, 2002; Barrio et al., 2003; Cabassa, Zayas & Hansen, 2006; Ojeda & McGuire, 2006; Cook, McGuire & Miranda, 2007; Williams et al., 2007; Dobalian & Rivers, 2008). In fact, analyses of outpatient mental health service use in large, nationally representative samples have consistently found these race differences, suggesting that, at least when it comes to discretionary treatment – the sort of treatment the Andersen model was intended to predict – race remains a critical predisposing characteristic.

While studies have evaluated several possible explanations for these disparities, including race differences in socioeconomic status (SES) and evaluated and perceived need, none has successfully accounted for them. For example, while the enabling effects of such socioeconomic measures as education (Swartz et al., 1998; Neighbors et al., 2007) and insurance (Carrasquillo et al., 1999; Brown et al., 2000; Kirby, Taliaferro & Zuvekas, 2006) are clear, research has shown race disparities in treatment persist net of SES (Padgett, Burns & Patrick, 1994; Snowden & Thomas, 2000; Alegria et al., 2002; Dobalian & Rivers, 2008). Similarly, although blacks and Latinos have lower lifetime and 12-month prevalence of both mood and anxiety disorders than whites (Wang, Berglund & Kessler, 2000; Smith et al., 2006), even studies that control for the presence of disorder find significant race differences in treatment (Freiman, Cunningham & Cornelius, 1994; Alegria et al., 2002; Harris, Edlund & Larson, 2005).

The same is true of perceived need. Regardless of psychopathology, blacks and Latinos tend to downplay their need for treatment (Ayalon & Alvidrez, 2007) and prefer an approach focused on self-reliance, informal help from family and friends, and spirituality (Neighbors, Musick & Williams, 1998; Peifer, Hu & Vega, 2000; Hines-Martin et al., 2003b; Chatters et al., 2008). However, studies that control for the resulting differences in perceived need for professional treatment find that, even among individuals who think they need help, blacks and Latinos are less likely to get it than whites (Wells et al., 2001; Zuvekas & Fleishman, 2008).

Therefore, as the Andersen model of health service utilization posits and scores of previous studies clearly show, race and need are essential – and not mutually exclusive – influences on

eventual help-seeking. As such, I did not seek simply to replicate previous studies' findings of race disparities that persist net of need, but rather to examine the possibility of interplay between these critical factors in determining mental health treatment. In this effort, I took my cue from recent studies of the intersection of race and need, a few focused on use of mental health services and a few on psychiatric epidemiology. I discuss these studies in more detail below, along with ways I sought to build upon their findings.

### **THE INTERSECTION OF RACE AND NEED**

As the preceding review makes clear, research has long analyzed service use for different disorders and for different racial/ethnic groups, but it is only recently that Keyes et al. (2008) and Hatzenbeuhler et al. (2008) examined these together, with some interesting results. Using data from the 2001-2002 National Epidemiologic Survey on Alcohol and Related Conditions (NESARC), Keyes et al. (2008) disaggregated blacks and whites by disorder type, and replicated black-white disparities in treatment for some types of disorders but not for others. Namely, blacks were less likely than whites to receive treatment for mood and anxiety disorders, equally likely to do so for alcoholism, and more likely to do so for drug addiction (Keyes et al., 2008). Using the same data but restricting analyses to individuals with comorbid mood/anxiety and substance use disorders, Hatzenbeuhler et al. (2008) found the same trends. Among individuals who had both mental (mood/anxiety) and substance use disorders, blacks were still less likely to get treatment for mood and anxiety, equally likely to get it for alcohol, and more likely to get it for drugs (Hatzenbeuhler et al., 2008). Considering that mood and especially anxiety disorders are much more common than alcohol- and especially drug-related disorders (Kessler & Wang, 2008), these findings clarify the aggregate race differences in treatment rates found in most mental health services research and highlight the potential utility of interaction analyses.

As such, I base my work in part on theirs, but seek to build upon it in several ways as well. First, because of the large numbers of Latino respondents in the CPES, I extend the original black-white comparisons to also include Latinos. Second, while they had examined lifetime treatment, I

heed the warning of recall bias (Simon & Von Korff, 1995) and focus only on treatment received within the 12 months prior to interview. Third, while they had been concerned, in large part, with differences in treatment for comorbid anxiety/mood (including both uni- and bipolar depression) and substance use disorders, I focus on the more common disorders of depression and anxiety, excluding the rare bipolar spectrum disorders altogether and using comorbid substance use only as an indicator of severity. I do consider comorbidity, but where Hatzenbeuhler et al. (2008) had combined mood and anxiety, my focus is on determining whether race interacts with depression alone *or* anxiety alone differently than with comorbid depression *and* anxiety. Finally, I move beyond their emphasis on type of disorder and, in addition to the measure of depression-anxiety comorbidity, incorporate measures of persistence and severity.

On this last count, I am guided in part by several other recent studies. First, using data from the National Alcohol Surveys, Schmidt et al. (2007) noted that, while bivariate analyses found few race differences in service use for alcohol problems, significant differences emerged in multivariate models that also factored in alcohol problem severity and its interaction with race. Among individuals with more severe alcoholism, both blacks and Latinos were less likely to have used services than their white counterparts, a trend especially problematic for Latinos, whose alcohol problems also tended to be more severe than whites’.

Their findings highlight the value of including Latinos, as Latino-white disparities in patterns of both treatment need and treatment use may be different from analogous black-white disparities. They also underscore the importance of considering not only disorder type but also severity *and* its interaction with race, suggesting that, for example, if the Hatzenbeuhler et al. (2008) and Keyes et al. (2008) studies had taken these into consideration, they may have found some black-white differences in alcohol service use after all.

Second, in addition to these services studies, my research was informed by two recent epidemiological analyses. The first of these used data from the CPES to explore race differences in the prevalence of serious mental illness (SMI) alongside different types of disorders (Lee, Sinkewicz

& Muennig, 2010). They found that, while whites generally had the highest 12-month prevalence rates,<sup>3</sup> their disorders tended to be relatively mild. Once analyses were limited only to individuals with disorders and they were disaggregated by severity, it turned out that, among whites, anxiety and depression were only rarely associated with SMI. Instead, blacks had the highest rates of SMI for depression and were a close second to Latinos for SMI associated with anxiety disorders. Black-white differences in the severity of depression and anxiety disorders have also been found in other studies (Williams et al., 2007; Himle et al., 2009).

The second set of analyses used data from the NCS and NCS-R to consider race differences not only in lifetime risk of disorders but also in the risk of persistent disorders (Breslau et al., 2005, 2006). While blacks and Latinos tended to have lower lifetime risk, their risk of persistent disorders was higher. In other words, whites were more likely to get sick but also more likely to get better, while blacks and Latinos were less likely to get sick in the first place but more likely to stay sick once they did. Findings based on data from the National Survey of American Life (NSAL) confirmed the black-white disparity in the persistence of depression (Williams et al., 2007).

Of course, the relationship, if any, between persistence and severity is unclear. They may both be caused by external factors, or it may also be that more severe disorders are more likely to persist or that the longer disorders persist the more severe they become. While these are important questions, answering them is beyond the scope of my study, which seeks instead to find out whether

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<sup>3</sup> Previous studies have not always been unanimous on the question of prevalence rates. Most find that whites' lifetime prevalence rates are highest for both depression and anxiety disorders, but the specific figures tend to vary somewhat. They are even more divided on the question of 12-month rates. Some find whites' and nonwhites' rates to be similar (Williams et al., 2007), while others find that either whites (Smith et al., 2007; Lee, Sinkewicz & Muennig, 2010) or nonwhites (Breslau et al., 2005) are more likely to present with recent disorders. These discrepancies could be due to a number of methodological issues. For example, it could be a question of differences in the survey instruments, as the large-scale community studies from which these data are generally drawn use a variety of instruments to assess epidemiology. Moreover, since many of these survey instruments are available only in English, Latino samples necessarily fail to represent the large portions of the Latino population with limited English language ability (Alegria et al., 2007). Finally, both Latino and black subsamples in many of these studies, most of which do not oversample respondents of minority race, tend to be small, leaving significant room for error in estimating population parameters (Alegria et al., 2007). The CPES, on which this study is based, makes some important headway in addressing the latter two problems of Latino representation (using both an English- and a Spanish-language instrument) and sample size (oversampling both blacks and Latinos in the NSAL and NLAAS, respectively). As mentioned above, recent analyses of CPES data found 12-month prevalence rates were generally higher among whites (Lee, personal communication, March 10, 2010).

there were significant race differences in the roles persistence and severity, as well as comorbidity, play in prompting individuals to seek mental health treatment.

## **HYPOTHESES**

To sum up, this study evaluates four hypotheses. First, I expect to find that, though their prevalence rates are lower, when blacks and Latinos do have depression or anxiety, their disorders are more persistent and more severe than whites'. They may also be more likely to have comorbid conditions. Second, I expect rates of mental health service use to be lower among blacks and Latinos than among whites. Third, I expect service use rates to be higher among respondents with greater need for services, as operationalized by persistent, severe, and comorbid disorders. Fourth, I expect that race may interact with need for treatment in a way that expands the race gap in service use among the most presumably "needy" respondents.

## **DATA, VARIABLES, AND METHODS**

### **DATA**

My analyses utilized data from the Collaborative Psychiatric Epidemiology Surveys (CPES) project. The CPES comprised three large surveys – National Comorbidity Survey Replication (NCS-R), the National Latino and Asian American Study (NLAAS), and the National Survey of American Life (NSAL) – the latter two of which oversampled Latino (and Asian) Americans and African-American and Caribbean blacks.

All three surveys used a multi-stage area probability sampling design – sampling metropolitan statistical areas (MSAs) and counties, followed by area segments, housing units within these segments, and finally eligible respondents within selected households. While together they comprised a total of 252 MSAs and counties, only the 50 representing the most densely populated areas of the country were included in all three surveys. The remaining, unique areas were included to accommodate the particular racial/ethnic foci of the respective surveys (for more on CPES geographic areas, see Heeringa et al., 2004).

All three included non-institutionalized adults aged 18 years and older residing in U.S. households. However, while the NCS-R and NSAL sampled only English-speaking residents of the coterminous U.S., the NLAAS included speakers of Spanish and several Asian languages and expanded its sample to include residents of Hawaii.

As discussed in chapter 1, the CPES used both a core questionnaire and web-based cross-linked documentation. The core questionnaire was Composite International Diagnostic Interview (CIDI), a standardized psychiatric diagnostic instrument designed for administration by lay interviewers (Kessler & Üstün, 2004). Clinical reinterviews have found generally good concordance between CIDI diagnoses and independent clinical evaluations (Haro et al., 2006).

In the NCS-R, the core diagnostic assessment in part 1 was administered to all 9282 respondents, but additional sections in part 2 were administered to only 5692 these respondents, oversampling individuals with clinically significant psychopathology (see Kessler et al., 2004a, 72). With slight variation among the three surveys, data were collected between 2001 and 2003, primarily using the computer-assisted personal interview (CAPI) method.

The final CPES sample included 20013 respondents, but cases were dropped in a series of steps, as follows:<sup>4</sup>

**Step 1.** Because analyses were limited to Latino, black, and non-Latino white respondents, the 2284 Asian and 284 other respondents were dropped.

**Step 2.** Because conducting interviews was costly and a considerable number of white respondents were included in the NCS-R, the 891 (11.7%) white respondents in the NSAL skipped (among others) the services section and were also dropped.

**Step 3.** The NSAL included a commitment screen for respondents unwilling or unable to commit to careful and thoughtful consideration of the battery of health and mental health questions, eliminating another 5 (.1%) Latino and 152 (2.4%) black respondents.

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<sup>4</sup> In Appendix 2A, see Table 2A.1 for breakdown of sample size by survey and race, and Table 2A.2 for summary of reason and number of cases dropped in each step.



**Step 4.** Since some of the specific questions used to operationalize severity were administered only to NCS-R part 2 respondents, 356 Latino (9.8%), 513 (8.2%) black, and 2516 (33.2%) white respondents in NCS-R part 1 were also dropped.

**Step 5.** Analyses in this paper were restricted to the more prevalent uni-polar depression, including both major and dysthymic depressive disorders. Therefore, 54 (1.5%) Latino, 236 (3.8%) black, and 267 (3.5%) white respondents with any history of bipolar depression (including subthreshold) were dropped.<sup>5, 6</sup>

**Step 6.** The anxiety disorders included in the analyses were only those which were assessed in all three surveys – panic disorder, agoraphobia (with or without panic), social phobia, generalized anxiety disorder (GAD), and posttraumatic stress disorder (PTSD). Because the reference group for respondents with the aforementioned uni-polar depression and these anxiety disorders was to consist of respondents with no known history of disorders, respondents with *any* history of another assessed disorder but *no* history of uni-polar depression or the anxiety disorders specifically included in the analyses were also dropped. These other disorders included substance use disorders (assessed in all three surveys); intermittent explosive disorder (NCS-R, NLAAS); oppositional-defiant, conduct, separation anxiety, and adult separation anxiety disorders (NCS-R, NSAL); and specific phobia (NCS-R). As such, an additional 333 (9.2%) Latino, 655 (10.5%) black, and 700 (9.2%) white respondents were also dropped.

**Step 7.** Finally, one white and 43 (.7%) black respondents without valid data on the outcome measure were also dropped.

The final analytic sample consisted of 10723 respondents – 2872 (79.3%) Latinos, 4639 (74.7%) non-Latino blacks, and 3213 (42.3%) non-Latino whites.

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<sup>5</sup> Since bipolar spectrum disorders tend to be particularly severe (e.g., Kessler et al., 2005a), these respondents were dropped regardless of comorbidity with dysthymic depression or anxiety, in order to avoid biasing results.

<sup>6</sup> The seemingly low prevalence of bipolar spectrum disorders among Latinos is likely due to the fact that the NLAAS did not assess these disorders, so that a number of Latino respondents who may have actually had bipolar disorder were instead classified as having major depression. Complex-design-adjusted analyses of the NCS-R and NSAL, both of which did assess bipolar spectrum disorders, found a 5% (SE .9%) lifetime prevalence of bipolar disorder among Latinos, with a rate of 4.1% among both blacks (SE .4%) and whites (SE .2%). The difference was not statistically significant.

## VARIABLES

### *DEPENDENT VARIABLES*

The main outcome was a dichotomous indicator of *12-month service use*, or mental health services used in the 12 months immediately prior to interview. An item in the services section asked respondents whether they had ever received MH services and, if so, whether they had received services from any on a list of professionals in the preceding 12 months. Additional items asked respondents about use of mental health hotlines, self-help groups, and internet support groups. Data from these items were combined to create a dichotomous indicator of 12-month service use, where any MH-related visit or use of any MH-related resources (i.e., hotline, internet support group) within the preceding 12 months constituted 12-month service use.<sup>7</sup>

### *INDEPENDENT VARIABLES*

Independent variables included race and evaluated need for treatment, operationalized by persistence, severity, and comorbidity.

**Race** was coded into Latino, non-Latino black, and non-Latino white (reference group).

#### **Need for treatment**

To differentiate between the effects of persistent depression and persistent anxiety, separate persistence measures were created for each group of disorders. *Disorder persistence* was coded into in-remission (lifetime disorder only), recent (12-month disorder only), persistent (lifetime and 12-month disorder), and no history of disorder (reference group). Persistence was determined individually for each disorder, by taking all lifetime cases and determining whether they met disorder criteria within the previous 12 months, prior to the previous 12 months,<sup>8</sup> or both. Individual disorder persistence measures were subsequently combined into measures of overall persistence for

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<sup>7</sup> See Table 2B.1 in Appendix 2B for review of professionals and resources included in each mental health service sector.

<sup>8</sup> This was determined by taking the difference between age at interview and age at onset.

depression and for anxiety, with primacy given to persistent disorders (e.g., a respondent with panic disorder in remission but persistent GAD would be treated as having persistent anxiety).<sup>9</sup>

To differentiate between the effects of severe depression and severe anxiety, severity was also measured separately for depression and anxiety but, unlike persistence, could only be measured for 12-month disorders. *Disorder severity* was coded into mild, moderate, severe, and no 12-month disorder.<sup>10</sup> Since preliminary analyses showed that, even in the absence of recent symptoms, disorders in remission were significant predictors of 12-month service use, a lifetime indicator was added to the multivariate analyses to differentiate between those with lifetime but not 12-month disorders and those with no disorder history (multivariate analysis reference group). Like persistence, severity was determined individually for each disorder according to respondent data on (1) functional impairment, (2) days out of role, (3) suicidality, (4) substance dependence comorbidity, and (5) psychosis.

The CIDI assessed functional impairment and days out of role separately for each disorder. *Functional impairment* was based on the Sheehan Disability Scale (SDS), which asked respondents to think about the worst of the preceding 12 months and rate on a scale of 0 to 10 the degree to which a given symptom (e.g., worry) had interfered with home management, work, close personal relationships, and social life.<sup>11</sup> *Days out of role* were the days, out of the preceding 365, a given symptom had rendered the respondent totally unable to work or carry out normal activities.

Suicidality, substance dependence comorbidity, and psychosis were assessed in separate sections, independent of depression and anxiety. *Suicidality* was categorized as a suicide attempt with serious lethality intent or as a suicidal gesture/plan/ideation. *Substance dependence comorbidity* was categorized as alcohol/drug dependence with or without physiological dependence syndrome.

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<sup>9</sup> There were 14 respondents with one lifetime anxiety disorder and another 12-month anxiety disorder. These were also coded as having persistent anxiety.

<sup>10</sup> Since severity was measured separately for depression and anxiety, respondents in the no 12-month disorder category were not identical across the two measures. However, multivariate analyses controlled for this fact by entering both measures simultaneously.

<sup>11</sup> Responses to each of the four SDS domains were given on 0-10 visual analog scales with verbal descriptors and associated scale scores of none, 0; mild, 1-3; moderate, 4-6; severe, 7-9; and very severe, 10.

Finally, the *psychosis* screen identified respondents with at least one of a number of psychotic experiences.

An anxiety disorder was considered severe if it resulted in very severe impairment (score of 9 or 10) in two or more SDS domains, at least severe impairment (score of 7 or 8) in three or more SDS domains, or at least 30 days out of role, or was accompanied by a suicide attempt with serious lethality intent or substance dependence with physiological dependence syndrome. Moderate anxiety disorders resulted in at least moderate impairment (score of 4 to 6) in two or more SDS domains or 15 to 29 days out of role, or were accompanied by a suicidal gesture/plan/ideation or substance dependence without physiological dependence syndrome. All others were considered mild. Because functional impairment and days out of role had been assessed separately for each anxiety disorder, I determined level of severity individually for each anxiety disorder first, then combined them into a single measure, setting overall anxiety severity equal to the severity of the respondent's most severe anxiety disorder. Severity coding for depression was the same, except that severe depression could also be accompanied by a positive screen for psychosis.<sup>12</sup>

Like severity, *disorder comorbidity* was measured only for 12-month disorders, and coded into depression only, anxiety only, comorbid depression and anxiety, and none. Multivariate analyses of the impact of comorbidity also included the aforementioned lifetime indicator, to differentiate between those with a lifetime history of disorders and those with no disorder history (multivariate analysis reference group). As mentioned above, anxiety disorders included panic disorder, agoraphobia (with or without panic), social phobia, GAD, and PTSD, while depression included major and dysthymic depressive disorders.<sup>13</sup>

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<sup>12</sup> Previous studies have assessed *overall* illness severity. For example, a number of existing severity schemes treated all bipolar cases as severe (Kessler et al., 2004b, 2005b; Uebelacker et al., 2006; Wang et al., 2006). Since I attempted to assess the severity of individual disorders, my scheme draws on those used in previous studies, but is not an exact replica of any of them. However, following previous studies, I compared severity ratings to number of days out of role. The means were significantly higher for those classified as severe, moderate, and mild. For depression: 86.49, 4.02, .85, respectively;  $F_{1,929, 991}=100.64$ ,  $p<.001$ . For anxiety: 74.62, 3.99, 2.96, respectively;  $F_{1,921, 1333}=59.91$ ,  $p<.001$ .

<sup>13</sup> Although Mojtabai, Olfson, and Mechanic (2002) found that comorbid substance use affected treatment rates for anxiety and especially depression (with considerably lower treatment rates for respondents with both

## CONTROL VARIABLES

All analyses controlled for sociodemographic characteristics.

Socioeconomic characteristics included education, work status, and insurance coverage.

*Education* was based on years of schooling and coded into 0 to 11 years, 12 years (reference group), 13 to 15 years, and 16 years or more. *Work status* was coded as employed (reference group), unemployed, or out of the workforce. Finally, as a proxy for access to care, *insurance coverage* was coded as private, public, other, or uninsured (reference group). Private insurance included coverage provided by a current or past employer or union, either directly to the respondent or to a family member. Public insurance included Medicare, Medicaid, and military insurance. Other insurance included plans purchased directly from insurance companies on the individual market and supplemental insurance such as Medigap. Respondents could report multiple sources of insurance.

Demographic characteristics included sex, age, region of residence, and marital status. *Sex* was an indicator for females, with males as the reference group. *Age* was recoded into three categories for respondents aged 18-34, 35-49 (reference group), and 50 and over. *Region of residence* included Northeast (reference group), Midwest, South, and West. Finally, *marital status* consisted of currently married (including cohabiting – reference group), formerly married (including divorced, separated, and widowed), and never married.

## METHODS

Using the Taylor series linearization method implemented in SPSS (SPSS Inc., 2009), all analyses accounted for complex design, adjusting for differential probabilities of selection, nonresponse, and poststratification (for more on CPES weighting procedures, see Heeringa & Berglund, 2004). For bivariate analyses, the Rao-Scott chi-square test of association was used to obtain corresponding design-based F statistics. Multivariate analyses consisted of complex-design-adjusted logistic regressions, with exponentiated coefficient estimates, 95% confidence intervals, and t-tests for all parameters. Because complex-design-adjusted standard errors tend to be larger than

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depression and substance use, relative to rates reported by respondents with depression alone), preliminary analyses showed there were too few cases to further separate respondents by substance use comorbidity.

unadjusted standard errors, some differences that appear to be large may not be statistically significant.

First, Table 2.1 compares the distributions of socioeconomic and demographic characteristics across racial groups. Second, Table 2.2 compares the distributions of 12-month service use by race and need for treatment (aim 1). It also presents the distributions of service use by sociodemographic characteristics. Third, focusing on race differences in need for treatment, Table 2.3 compares the distributions of lifetime and 12-month prevalence of depression and anxiety and then, restricting analyses to respondents with lifetime or 12-month histories (depending on the outcome measure), compares distributions of persistence, severity, and comorbidity (aim 2).<sup>14</sup>

Examining the likelihood of 12-month MH service use, Tables 2.4.a through 2.4.c present results of multivariate analyses of the effects of race and evaluated need for treatment and possible interactions between race and need. Reproduced in all three tables, model 1 estimated the effects of Latino and black race, net of sociodemographic characteristics commonly associated with race and with MH service use (aim 1).<sup>15</sup> Including race and sociodemographics, models 2 thru 4 sequentially entered disorder persistence, severity, and comorbidity (aim 1), while models 2.1 thru 4.1 entered the respective interaction terms (aim 3). Disorder persistence is presented in Table 2.4.a, disorder severity in Table 2.4.b, and disorder comorbidity in Table 2.4.c.

Because preliminary analyses had shown that disorders in remission remained statistically significant predictors of treatment, the severity and comorbidity models (models 3 and 4) also included a lifetime indicator for respondents who did not have current disorders and would otherwise have been grouped with respondents with no known disorder history in the ‘no 12-month disorder’ group. This effectively synchronized the reference group for all three analyses, to

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<sup>14</sup> Analyses of persistence and severity were conducted separately for depression and anxiety, and included respondents with lifetime and 12-month histories of these disorders, respectively (i.e., lifetime for persistence, 12-month for severity).

<sup>15</sup> Preliminary analyses showed the effects of Latino and black race remained almost unchanged between a model that included only race and demographics and a model that included race, demographics, and SES initially estimated a model including only race and demographics. In the interest of presentation, only the race-demographics-SES model is included in the table.

respondents with no known history of psychopathology.

Additionally, because persistence and severity had been measured separately for depression and for anxiety disorders, the persistence and severity models (models 3 and 4) included both sets of measures, one for depression and one for anxiety. This enabled me to isolate the effects of depression on one hand and anxiety on the other, to more accurately pinpoint the main and interactive effects of their persistence and severity.<sup>16</sup>

## **RESULTS**

### **MENTAL HEALTH TREATMENT**

Table 2.2 shows considerable variation in rates of mental health service use by race, most sociodemographic characteristics, and especially need for services.

Treatment rates were considerably higher among whites than among blacks and Latinos. They were also higher among the more educated, women, those in the mid-range age group (35-49), and the unmarried (including both formerly and never married). Not surprisingly, need was the strongest predictor of service use, which was more prevalent among respondents with severe and comorbid disorders. Despite the prediction that treatment rates would be highest among respondents with persistent disorders, it was respondents with new disorders who most often reported 12-month MH service use. As the reference group for all multivariate analyses, respondents with no known history of psychopathology had the lowest rates of service use.

### **RACE DIFFERENCES IN NEED**

Table 2.3 shows significant racial variation on simple indicators of disorder prevalence and on most of the fine-tuned measures of evaluated need for treatment.

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<sup>16</sup> Preliminary studies included two sets of analyses, one on the role of depression (leaving out respondents who only had anxiety, analytical sample size 12825) and one on the role of anxiety (leaving out respondents who only had depression, analytical sample size 13424). However, while these analyses yielded larger coefficients for the main effects of need and smaller standard errors for the race-by-need interaction terms, they did so by failing to actually isolate the effects of depression and anxiety. Additionally, despite the smaller standard errors on interaction terms, these analyses did not yield any more significant interactions than did the analyses described above. Therefore, I abandoned this strategy.

Lifetime prevalence of depression and of anxiety disorders was highest among whites and lower among blacks and Latinos. Twelve-month prevalence of depression was almost identical between whites and Latinos,<sup>17</sup> but considerably lower among blacks, while 12-month prevalence of anxiety was higher among whites than Latinos but still lowest among blacks. While whites' prevalence rates were consistently higher than blacks' and generally higher than Latinos', however, Table 2.3 shows that race differences among respondents who did have – or had had – disorders were somewhat more complex.

Blacks and Latinos were similar with regard to the persistence of depression, as their rates of depression in remission were considerably lower and rates of persistent depression considerably higher than whites'. Newly onset depressive disorders were also more prevalent among Latinos and especially blacks than among whites. In terms of persistence of anxiety disorders, blacks were much more similar to whites than to Latinos, who had lower rates of anxiety in remission and higher rates of persistent anxiety than both blacks and whites. Rates of new anxiety disorders were roughly similar for all three racial groups.

In terms of severity, blacks had the highest rate of severe 12-month depression and the lowest rate of mild depression. Latinos' severe depression rate was higher than whites' but so was their rate of mild depression, as whites' depressive disorders were often moderate. Albeit ostensibly large, however, these differences were not statistically significant. Among respondents with 12-month anxiety disorders, Latinos' disorders were most severe, followed closely by blacks'. Whites' anxiety disorders were less often severe and much more often mild.

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<sup>17</sup> Similar depression rates for whites and Latinos may be a function of the fact that most of the Latino subjects are drawn from the NLAAS, which did not assess bipolar disorder. Complex-design-adjusted analyses of the NCS-R and NSAL, both of which did assess bipolar disorders, showed 26.4% (SE 5%) of Latino respondents with either lifetime bipolar disorder or major depressive disorder had bipolar disorder. For 12-month cases, the corresponding figure was 34.7% (SE 6.4%). The resulting 95% confidence intervals suggest that, among NLAAS Latinos, 21.4-31.4% of the lifetime and 23.2-48.3% of the 12-month MDD cases might have been reclassified as having bipolar disorder had they received the necessary assessment. This would greatly reduce both lifetime and 12-month depression rates for Latinos, making them lower than corresponding rates for whites. Complex-design-adjusted analyses of the NCS-R and NSAL show the 12-month depression rate for Latinos is 7.1% (SE .9%). However, the lifetime rate is 17.1% (SE 1.5%), slightly higher than the 16.3% (SE .7%) adjusted lifetime rate when Latinos from all three surveys are included.



Finally, whites and Latinos had similar rates of comorbid 12-month depression and anxiety, which were higher than the corresponding rate for blacks. Compared to whites, Latinos had higher rates of depression only and lower rates of anxiety only. Because of their lower rate of comorbid depression and anxiety, blacks' rates of depression only and anxiety only were both higher than whites'.

## INTERACTIONS

Featuring only statistically significant effects, Tables 2.4.a thru 2.4.c present the results of multivariate analyses, which were largely consistent with the results of bivariate analyses described above. Both blacks and Latinos remained significantly less likely to have used mental health services within the previous year, net of demographic and socioeconomic characteristics (OR .5, .4-.6,  $p < .001$  for both blacks and Latinos; see also Figure 2.1). Because blacks' and Latinos' lifetime and 12-month prevalence rates of depression and anxiety disorders were generally lower than whites', entering measures of treatment need, which used respondents with no known history of psychopathology as the reference group, predictably reduced the effects of black and Latino race (models 2-4). Nevertheless, black and Latino race/ethnicity remained statistically significant predictors of mental health service use, net of disorder persistence (OR .7, .5-.8,  $p < .001$  for both), disorder severity (OR .6, .5-.8,  $p < .001$  for both), and disorder comorbidity (blacks: OR .6, .5-.8,  $p < .001$ ; Latinos: OR .7, .5-.8,  $p < .001$ ). Multivariate analyses confirmed strong association between evaluated need for services and 12-month service use (see also Figure 2.2). The expectedly robust effects of all treatment need measures set the stage for race-by-need interaction analyses.

However, of the 30 two-way interaction terms assessed in the subsequent analyses (models 2.1-4.1) only one was statistically significant ( $p < .05$ ). Since a single significant effect out of 30 could be due to chance, it is safer to assume there are no substantively significant race differences in the positive relationship between need for services and service use. To put it another way, these results suggest there are no substantively significant differences in the negative relationship between black and Latino race/ethnicity and service use, regardless of level of need.

## **DISCUSSION**

### **RACE DIFFERENCES IN TREATMENT AND NEED FOR TREATMENT**

Findings regarding race differences in service use and the need for services were generally consistent with previous studies. As expected, analyses showed significant Latino- and black-white gaps in rates of recent mental health treatment. Moreover, both Latino and black race/ethnicity remained statistically significant predictors of mental health service use even once analyses controlled not only for both socioeconomic and demographic characteristics but also for measures of need for treatment. In terms of treatment need itself, whites had the highest prevalence rates of lifetime and, in accord with previous analyses of CPES data, 12-month depression and anxiety. Analyses of more specific treatment need measures confirmed previous findings as well, as whites' disorders tended to be less severe and less persistent than blacks' and Latinos'.

### **THE IMPACT OF NEED FOR TREATMENT**

As in previous studies, treatment rates were higher among those with depression than among those with anxiety. When depression and anxiety disorders were disaggregated by persistence and severity, treatment rates were always higher for the former than for the latter across all persistence and severity categories. However, as expected, mental health treatment was most common among those with comorbid depressive and anxious disorders. Treatment was also strongly correlated with severity, with steady increases from mild to moderate to severe disorders for both depression and anxiety.

Findings on the impact of disorder persistence were somewhat unexpected, however. While previous studies had shown treatment rates for recent disorders to be higher than those for disorders in remission, none had considered the role of their persistence. Drawing a distinction between 12-month disorders that had actually come on within those 12 months and 12-month disorders that constituted either a constant problem or at least another episode of a recurrent one, I had expected to find treatment rates to be highest for the latter. I had assumed both that respondents with disorders in remission would no longer require treatment and that respondents whose disorders had

come on within the 12 months prior to interview may not have had enough time to recognize their symptoms as constituting a problem that required professional treatment (either because their lives had not yet been sufficiently impacted by the symptoms or because they expected to be able to take care of the symptoms on their own, or a combination thereof). However, while respondents with persistent disorders were indeed much more likely than respondents with disorders in remission to report treatment, respondents whose conditions were actually new were even more likely to do so. This held true for both depressive and anxious disorders.

### **THE INTERSECTION OF RACE, NEED, AND TREATMENT**

Because my operationalization of treatment limited it to that which had been received within the preceding 12 months, it is unknown whether respondents who did not report recent treatment had sought treatment at some point prior to those 12 months or had never done so. Therefore, it is possible that these were individuals who had sought treatment but found it ineffective, unaffordable, or otherwise unsustainable. In fact, studies have shown that, even when they do seek treatment, blacks attend fewer sessions and are more likely to terminate prematurely (O'Sullivan et al., 1989; Hu et al., 1991; Sue, Zane & Young, 1994), suggesting their lower 12-month treatment rates may be, in part, a function of unwillingness or inability to sustain long-term mental health treatment.

Of course, it is also possible that respondents who did not report recent treatment were individuals who had never sought treatment in the first place and whose untreated disorders had thus been allowed to persist. In either scenario, however, their disorders would have gone under-treated or untreated altogether. Since previous studies have found that untreated disorders can occur more frequently and unexpectedly (Kessler & Price, 1993; Post & Weiss, 1998), blacks' and Latinos' lower treatment rates might be at least partly responsible for their disorders' tendency to persist. Since untreated disorders can also become more severe (Post & Weiss, 1998), the fact that Latinos and blacks are less likely than whites to seek treatment might also help explain why they tend to fare worse in terms of disorder severity.

Importantly, the practically complete absence of significant race-by-need interaction terms underscored the fact that Latino- and black-white gaps persisted across categories of comorbidity, persistence, and severity for both depression and anxiety disorders. While Schmidt et al. (2007) had found greater race gaps in treatment for more severe alcohol problems, my analyses revealed no similar interaction between race and the severity of anxious or depressive disorders. While it is encouraging to note that, compared to whites', blacks' and Latinos' severe disorders were not markedly more unlikely to be treated than mild or moderate disorders, the fact remained that *all* of their depressive and anxious disorders were significantly less likely to be treated than corresponding disorders among whites, regardless of severity.

This held true for persistence as well. The Latino- and black-white treatment gaps for persistent disorders may be no larger than corresponding gaps for new disorders or disorders in remission (or vice versa), but the truth is that Latinos and blacks were considerably less likely than whites to make use of services for *any* of their depressive and anxious disorders, regardless of persistence.

I had expected to pinpoint specific "locations" of the Latino- and black-white gaps in aggregate rates of mental health treatment, in an effort to provide policymakers with a picture clearer than the one heretofore provided by studies of these aggregate rates. I had been guided in the formulation of my analyses both by a theoretical model of health service utilization that emphasized the influence of individual-level factors such as race and need (Andersen, 1968, 1995) and by a number of recent studies that had taken a closer look at the intersection of these two important elements. And, while I did find that both race and especially need held significant sway in determining treatment and that there were significant race differences on a variety of measures of need, meaningful *interactions* between these elements were scarce. While the policy implications of significant interactions might have been clearer, the fact that it seems these interactions may not exist is not without policy implications itself. It points to a continued need for broad outreach efforts to the Latino and black communities, raising awareness about common difficulties with depression and

anxiety, the potential for relief provided by appropriate services, and the milieux in which these services can be sought.

## **CONCLUSION**

### **LIMITATIONS**

There are several notable limitations to my analyses.

First, there are potential threats to validity inherent to CPES methodology, which have previously been noted in service use studies based on these data (e.g., Wang et al., 2005, 2006; Uebelacker et al., 2006). Sampling excluded the homeless and institutionalized populations, who have been found to have higher prevalence of mental disorders (e.g., North et al., 2004; Folsom et al., 2005; Bureau of Justice Statistics, 2006) and tend to be disproportionately nonwhite (Bureau of Justice Statistics, 2003, 2008; Congressional Research Service, 2005). While the exclusion of these groups is unlikely to have skewed statistics on outpatient mental health care, it did likely result in an underestimation of the burden of untreated mental disorders among Latinos and especially blacks. In addition, systematic nonresponse and non-reporting may have underestimated unmet need for treatment (Kessler et al., 2004a). Without corroboration, self-reports may have overestimated service use, especially among respondents with more serious disorders (Rhodes, Lin & Mustard, 2002; Rhodes & Fung, 2004). While these factors could have contributed to an underestimation of untreated mental disorders, only the first is likely to have done so disproportionately for Latinos and especially blacks.

Second, certain aspects of CPES diagnostic assessment undermine validity as well. Most importantly, the CIDI neglected some classes of disorders (e.g., schizophrenia, personality disorders), so that respondents who met criteria for one or more of the non-assessed disorders could have been misclassified as having none. However, there were also differences in the breadth of diagnostic coverage across the three component surveys. For example, only the NCS-R assessed specific phobia, so that NCS-R respondents who met criteria for this disorder – but not for any other included disorder – were excluded from the analyses, while comparable respondents in the NLAAS

and NSAL remained in the sample misclassified as having no mental health history. This may be problematic considering the NLAAS and NSAL provided most of the Latino and black respondents in my sample, especially in light of specific phobia's high prevalence (Kessler et al., 2005a) and low treatment rates (Wang et al., 2005).<sup>18</sup> Similarly, since the NLAAS did not assess bipolar spectrum disorders, some bipolar Latino respondents in my sample would have been misclassified as having major depression.

Third, the oversampling procedures of the NLAAS and NSAL provided large numbers of both Latino and black respondents and thereby unprecedented statistical power for the sort of analyses conducted in this study. However, disaggregating respondents' disorders by comorbidity but especially by persistence and severity sometimes resulted in less than optimal cell sizes.<sup>19</sup> This, in turn, led to large standard errors for some of the interaction terms. Adjusting for complex design, which also generally raises standard errors, may have increased the risk of type 2 error. Therefore, it is possible that some interactive effects, which may considerably impact mental health treatment in the real world, were overlooked by my analyses.

Fourth, the NLAAS had large amounts of missing data (68.6% of Latino respondents) on two services questions that have elsewhere been used to operationalize self-perceived need for treatment (e.g., Katz et al., 1997; Mojtabai, Olfson & Mechanic, 2002; Garrido et al., 2009).<sup>20</sup> While the reasons for this are unclear (Chen, personal communication, March 5, 2010), it was prohibitive with regard to analyses of the main and interactive effects of perceived need. Since supplemental

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<sup>18</sup> Notably, the impact of this distortion may be tempered by the fact that analyses of the NCS-R have found specific phobia to be the least serious of all assessed disorders (Kessler et al., 2005a). Since the only unidentified cases of specific phobia were ones not comorbid with depression or other anxiety disorders, at least this particular discrepancy between the component surveys' diagnostic coverage is unlikely to be underestimating blacks' or Latinos' unmet *serious* need for treatment.

<sup>19</sup> See Table 2A.3 in Appendix 2A for cell sizes for persistence, severity, and comorbidity of depression and anxiety disorders, by race.

<sup>20</sup> Respondents who reported no treatment within the past 12 months were asked whether, during this period, there had been a time when they felt they might need to see a professional. Affirmative answers were considered indications of self-perceived treatment need. Second, respondents who did report recent treatment were asked whether they did so voluntarily or under pressure from others. Voluntary treatment was considered an indication of perceived need.

analyses of NCS-R data produced interesting findings,<sup>21</sup> it is regrettable these analyses could not be extended to the full CPES dataset.

Finally, although the Andersen model points also to the influence of health beliefs, the CIDI provided very limited means of assessing these sorts of attitudinal or cognitive factors. Due to skip patterns, items that most closely approximated respondent beliefs about the potential utility of treatment (along with a score of other reasons respondents may have quit, delayed, or forgone treatment) had large amounts of missing data, and were therefore left out of my analyses. This is unfortunate, as it precluded a fuller application of the Andersen model. Moreover, since a recent Institute of Medicine report explicitly defined a service disparity between groups as the difference in use that cannot be explained solely by differences in preferences or need (IOM, 2002), by failing to account for respondent beliefs, my analyses may have overstated Latino- and black-white treatment disparities.

#### **DIRECTIONS FOR FUTURE RESEARCH**

Some of the limitations of this study readily point to potentially fruitful directions for future research. Two of the major limitations relate to sample sizes, and while the purpose of my analyses was to isolate the effects of depression and anxiety, analyses that would not use such disorder-specific persistence and severity measures might be better able to detect interactive effects (if they exist). The use of these broader measures might also make it possible to restrict analyses to the NCS-R (or NCS-R and NSAL), where much smaller amounts of missing data on the self-perceived need questions would enable analysis of the main and interactive effects of both evaluated and perceived need side by side. Since studies have found that blacks and Latinos are both less likely to perceive a need for treatment and less likely to seek treatment even if they do perceive a need (Zuvekas & Fleishman, 2008), this more comprehensive set of analyses might yield interesting and insightful results.

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<sup>21</sup> Results of these analyses are presented in Table 2C.1 in Appendix 2C. The analysis showed that controlling for perceived need further reduced Latinos' and blacks' odds of treatment, vis-à-vis their white counterparts. In the interaction model, blacks and Latinos without perceived need were no less likely than corresponding whites to have sought treatment. In addition, of the two two-way interaction terms assessed, neither was significant.

Furthermore, previous studies have found that there are significant Latino- and black-white differences not only in overall rates of mental health treatment but also in the sectors in which individuals seek treatment and the quality of the treatment they receive. Blacks and Latinos are more likely to seek spiritual counsel in the HS sector, and may be overrepresented in general medical settings (Vega et al., 1999; U.S. Department of Health and Human Services, 2001; Cabassa, Zayas & Hansen, 2006). The fact that providers in these sectors are far less likely than specialty providers to render even minimally adequate treatment (Wang, Demler & Kessler, 2002; Wang et al., 2005; Neighbors et al. 2007) might help explain why blacks and Latinos tend to receive poorer care than their white counterparts (Sclar et al., 1999; Blazer et al., 2000; Wang, Berglund & Kessler, 2000; Young et al., 2001), though it is also possible that they are less likely to receive adequate care no matter where they seek it.

With its large numbers of both black and Latino respondents, the CPES dataset provides a unique opportunity to examine these differences in detail, for example by stratifying race groups by other potentially important predictors of treatment sector and/or quality such as education or insurance status. While my analyses found these socioeconomic characteristics seemed to have little effect on treatment in general, it may be that they have a significant impact on sector or quality, either for some groups of respondents or for all of them. Such analyses could contribute to a clearer picture of race-based disparities in multiple aspects of mental health treatment and guide policymakers' efforts at effective intervention. As such, I take up the issue of the relationship between race, on one hand, and service settings and the quality of services received, on the other, in the following chapters.



Table 2.1. Socioeconomic and demographic characteristics among Latinos, blacks, and whites<sup>a</sup>

Variable	Latino (N=2872)	Black (N=4639)	White (N=3212)	Adjusted F <sup>b</sup>
<b><i>Education (in years)</i></b>				<b>74.67***</b>
0-11	44.1 (1.8)	22.3 (1.2)	12.4 (1.2)	
12	26.4 (1.1)	37.5 (1.1)	31.5 (1.5)	
13-15	19.1 (1.2)	24.3 (.8)	28.7 (1.1)	
16+	10.4 (.9)	15.8 (1.1)	27.4 (1.4)	
<b><i>Work status</i></b>				<b>5.90***</b>
Employed	63.6 (1.7)	66.8 (1.2)	63.9 (1.1)	
Unemployed	7.8 (.9)	8.7 (.7)	5.3 (.7)	
Out of workforce	28.6 (1.7)	24.5 (1.0)	30.8 (1.0)	
<b><i>Insurance coverage<sup>c</sup></i></b>				
Uninsured	33.3 (2.1)	17.4 (.8)	8.4 (.7)	<b>150.10***</b>
Private	42.0 (2.3)	58.4 (1.5)	67.8 (1.7)	<b>58.33***</b>
Public	23.7 (1.3)	32.7 (1.2)	28.2 (1.4)	<b>6.62**</b>
Other	15.2 (1.0)	11.2 (.7)	28.4 (1.5)	<b>80.71***</b>
<b><i>Sex, female</i></b>	50.1 (1.5)	57.9 (.8)	55.5 (1.4)	<b>5.91**</b>
<b><i>Age</i></b>				<b>58.54***</b>
18-34	47.7 (1.6)	35.0 (1.3)	24.8 (1.5)	
35-49	30.3 (1.1)	33.1 (.9)	29.6 (1.3)	
50+	22.1 (1.2)	31.9 (1.2)	45.6 (1.5)	
<b><i>Region of residence</i></b>				<b>16.93***</b>
Northeast	16.2 (1.3)	18.1 (1.0)	20.5 (3.9)	
Midwest	9.0 (1.7)	16.2 (1.1)	27.1 (2.5)	
South	32.3 (4.0)	57.0 (1.8)	34.0 (2.7)	
West	42.5 (3.7)	8.8 (.6)	18.5 (2.7)	
<b><i>Marital status</i></b>				<b>29.89***</b>
Currently married	63.1 (1.4)	41.9 (1.1)	60.7 (1.4)	
Formerly married	15.1 (1.1)	26.3 (.8)	21.4 (.8)	
Never married	21.8 (1.4)	31.9 (1.2)	17.8 (1.4)	

<sup>a</sup> Weighted data from the Collaborative Psychiatric Epidemiology Surveys (CPES), 2001-2003; n=10723.

<sup>b</sup> The adjusted F is a variant of the second-order Rao-Scott adjusted chi-square statistic. Significance is based on the adjusted F and its degrees of freedom.

<sup>c</sup> Categories are not mutually exclusive, as respondents can report more than one source of coverage. Adjusted F values based on separate analyses of prevalence of each coverage source (including none).

<sup>o</sup> p≤.10, \*p≤.05, \*\*p≤.01, \*\*\*p≤.001 (two-tailed tests).

Table 2.2. Percentage reporting 12-month mental health service use by race, socioeconomic and demographic characteristics, and need for treatment<sup>a</sup>

Variable	% (SE)	Adjusted F <sup>b</sup>
<b><i>Race</i></b>		<b>35.38***</b>
Latino	9.8 (.6)	
Black	9.4 (.6)	
White	15.5 (.8)	
<b><i>Education (in years)</i></b>		<b>3.01*</b>
0-11	12.4 (1.3)	
12	12.5 (1.1)	
13-15	14.6 (1.1)	
16+	16.6 (1.2)	
<b><i>Work status</i></b>		2.08
Employed	13.8 (.9)	
Unemployed	10.6 (1.3)	
Out of workforce	15.4 (1.4)	
<b><i>Insurance coverage<sup>c</sup></i></b>		
Uninsured	11.8 (1.6)	
Private	13.4 (.7)	.88
Private	14.8 (1.2)	2.07
Other	12.7 (1.1)	.24
<b><i>Sex</i></b>		<b>61.72***</b>
Male	10.4 (.6)	
Female	17.0 (.9)	
<b><i>Age</i></b>		<b>15.18***</b>
18-34	14.0 (1.0)	
35-49	17.8 (1.0)	
50+	11.2 (.9)	
<b><i>Region of residence</i></b>		2.78 <sup>o</sup>
Northeast	14.9 (2.0)	
Midwest	13.8 (1.0)	
South	12.0 (1.1)	
West	17.1 (.9)	
<b><i>Marital status</i></b>		<b>15.48***</b>
Currently married	11.8 (.6)	
Formerly married	18.4 (1.4)	
Never married	14.0 (.6)	

<sup>a</sup> Weighted data from the Collaborative Psychiatric Epidemiology Surveys (CPES), 2001-2003; n=10723.

<sup>b</sup> The adjusted F is a variant of the second-order Rao-Scott adjusted chi-square statistic. Significance is based on the adjusted F and its degrees of freedom.

<sup>c</sup> Categories are not mutually exclusive; respondents can report more than one source of coverage. Adjusted F values based on separate analyses comparing respondents with each coverage source to uninsured respondents.

<sup>o</sup> p≤.10, \*p≤.05, \*\*p≤.01, \*\*\*p≤.001 (two-tailed tests).

Table 2.2 (continued). Percentage reporting 12-month mental health service use by race, socioeconomic and demographic characteristics, and need for treatment<sup>a</sup>

Variable	% (SE)	Adjusted F <sup>b</sup>
<b><i>Persistence</i></b>		
<i>Depression</i>		<b>347.43***</b>
No history of dep.	8.5 (.4)	
In remission	22.2 (1.5)	
Recent	63.8 (5.1)	
Persistent	51.9 (2.2)	
<i>Anxiety</i>		<b>209.22***</b>
No history of anxiety	8.4 (.7)	
In remission	19.4 (1.3)	
Recent	57.6 (7.6)	
Persistent	40.4 (1.1)	
<b><i>Severity</i></b>		
<i>Depression</i>		<b>270.74***</b>
No 12m depression	10.3 (.5)	
Mild	39.0 (5.2)	
Moderate	52.1 (3.2)	
Severe	64.2 (3.3)	
<i>Anxiety</i>		<b>304.33***</b>
No 12m anxiety	9.8 (.6)	
Mild	31.0 (1.5)	
Moderate	42.2 (2.4)	
Severe	61.2 (3.4)	
<b><i>Type</i></b>		<b>343.55***</b>
No 12m disorder	7.9 (.6)	
Depression only	45.6 (2.8)	
Anxiety only	31.7 (1.4)	
Depression & anxiety	61.8 (2.8)	
<b><i>Multivariate analysis ref. group</i></b>		
No history of disorder	5.5 (.5)	

<sup>a</sup> Weighted data from the Collaborative Psychiatric Epidemiology Surveys (CPES), 2001-2003; n=10723.

<sup>b</sup> The adjusted F is a variant of the second-order Rao-Scott adjusted chi-square statistic. Significance is based on the adjusted F and its degrees of freedom.

<sup>c</sup> Categories are not mutually exclusive; respondents can report more than one source of coverage. Adjusted F values based on separate analyses comparing respondents with each coverage source to uninsured respondents.

<sup>°</sup>p≤.10, \*p≤.05, \*\*p≤.01, \*\*\*p≤.001 (two-tailed tests).

Table 2.3. Lifetime and 12-month prevalence, persistence, severity, and comorbidity of depression and anxiety disorders among Latinos, blacks, and whites<sup>a</sup>

Variable	Latino	Black	White	Adj. F <sup>b</sup>
<b><i>Lifetime prevalence (n=10723)</i></b>				
Depression	16.2 (.8)	12.7 (.6)	22.6 (1.0)	<b>5.79***</b>
Anxiety	17.4 (.9)	19.9 (.7)	26.4 (1.1)	<b>33.31***</b>
<b><i>12-month prevalence (n=10723)</i></b>				
Depression	8.7 (.5)	6.5 (.5)	8.9 (.5)	<b>5.80**</b>
Anxiety	11.0 (.8)	10.9 (.6)	14.2 (.7)	<b>10.90***</b>
<b><i>Persistence</i></b>				
<b><i>Depression (n=2426)</i></b>				<b>8.85***</b>
In remission	46.8 (2.2)	48.6 (2.6)	60.4 (1.3)	
Recent	7.7 (1.6)	9.0 (1.3)	5.9 (.7)	
Persistent	45.5 (2.6)	42.5 (2.6)	33.7 (1.4)	
<b><i>Anxiety (n=2951)</i></b>				<b>3.07*</b>
In remission	36.8 (2.7)	45.7 (2.4)	46.1 (1.3)	
Recent	3.4 (1.0)	2.8 (.6)	2.6 (.4)	
Persistent	59.8 (2.8)	51.5 (2.4)	51.3 (1.2)	
<b><i>Severity</i></b>				
<b><i>Depression (n=1118)</i></b>				1.40
Mild	26.5 (2.8)	20.2 (3.5)	25.5 (2.4)	
Moderate	31.0 (2.6)	31.6 (3.6)	36.2 (3.3)	
Severe	42.6 (2.8)	48.1 (4.0)	38.3 (2.9)	
<b><i>Anxiety (n=1711)</i></b>				<b>4.75***</b>
Mild	39.8 (2.8)	39.4 (3.5)	51.4 (2.7)	
Moderate	27.1 (3.7)	31.6 (2.9)	26.9 (2.3)	
Severe	33.1 (3.2)	28.9 (3.1)	21.8 (1.7)	
<b><i>Comorbidity (n=2297)</i></b>				<b>3.43**</b>
Depression only	31.0 (2.3)	25.3 (2.5)	23.5 (1.3)	
Anxiety only	45.8 (2.2)	55.3 (2.4)	52.0 (1.6)	
Depression & anxiety	23.2 (2.0)	19.3 (2.1)	24.5 (1.4)	

<sup>a</sup> Weighted data from the Collaborative Psychiatric Epidemiology Surveys (CPES), 2001-2003.

<sup>b</sup> The adjusted F is a variant of the second-order Rao-Scott adjusted chi-square statistic. Significance is based on the adjusted F and its degrees of freedom.

<sup>c</sup> p≤.10, \*p≤.05, \*\*p≤.01, \*\*\*p≤.001 (two-tailed tests).

Table 2.4.a. Binomial logistic regression predicting effect of race, socioeconomic and demographic controls, disorder persistence, and interaction terms on 12-month mental health service use<sup>a</sup>

Variable	Model 1			Model 2			Model 2.1		
	Race, controls			Race, controls, persistence			Race, controls, persistence, interactions		
	OR	95% CI		OR	95% CI		OR	95% CI	
Intercept	.2***	(.1-.2)		.1***	(.0-.1)		.1***	(.0-.1)	
Race, Latino (ref white)	.5***	(.4-.6)		.7***	(.5-.8)		.7*	(.5-.9)	
Race, black (ref white)	.5***	(.4-.6)		.7***	(.5-.8)		.6***	(.5-.8)	
<i>Persistence (ref no history of depression/anxiety)</i>									
<i>Depression</i>									
In remission				2.2***	(1.8-2.8)		2.3***	(1.8-3.0)	
Recent				15.8***	(9.7-25.7)		16.5***	(9.0-30.4)	
Persistent				5.9***	(4.9-7.2)		6.39***	(5.1-8.0)	
<i>Anxiety</i>									
In remission				1.9***	(1.4-2.5)		1.8***	(1.3-2.4)	
Recent				10.3***	(4.7-22.8)		11.0***	(3.9-30.7)	
Persistent				4.0***	(3.2-5.2)		3.9***	(2.9-5.1)	
<i>Socioeconomic characteristics</i>									
Educ., 16+ (ref 12)	1.4*	(1.0-1.8)		1.4*	(1.0-1.9)		1.4*	(1.0-1.9)	
Insurance, public (ref none)	1.3*	(1.0-1.6)		1.4**	(1.1-1.7)		1.4**	(1.1-1.7)	
<i>Demographic characteristics</i>									
Sex, female	1.7***	(1.4-1.9)		1.4***	(1.2-1.7)		1.4***	(1.2-1.7)	
Age, 18-34 (ref 35-49)	.7***	(.6-.9)		.7**	(.6-.9)		.7**	(.6-.9)	
Age, 50+ (ref 35-49)	.4***	(.3-.6)		.6***	(.5-.8)		.6***	(.5-.8)	
Married, formerly (ref currently)	1.7***	(1.4-2.2)		1.3*	(1.1-1.7)		1.4*	(1.1-1.7)	
Married, never (ref currently)	1.4***	(1.1-1.7)		1.3	(.9-1.7)		1.3	(.9-1.7)	

<sup>a</sup> Weighted data from the Collaborative Psychiatric Epidemiology Surveys (CPES), 2001-2003; n=10723.

\*p≤.10, \*\*p≤.05, \*\*\*p≤.001 (two-tailed tests).

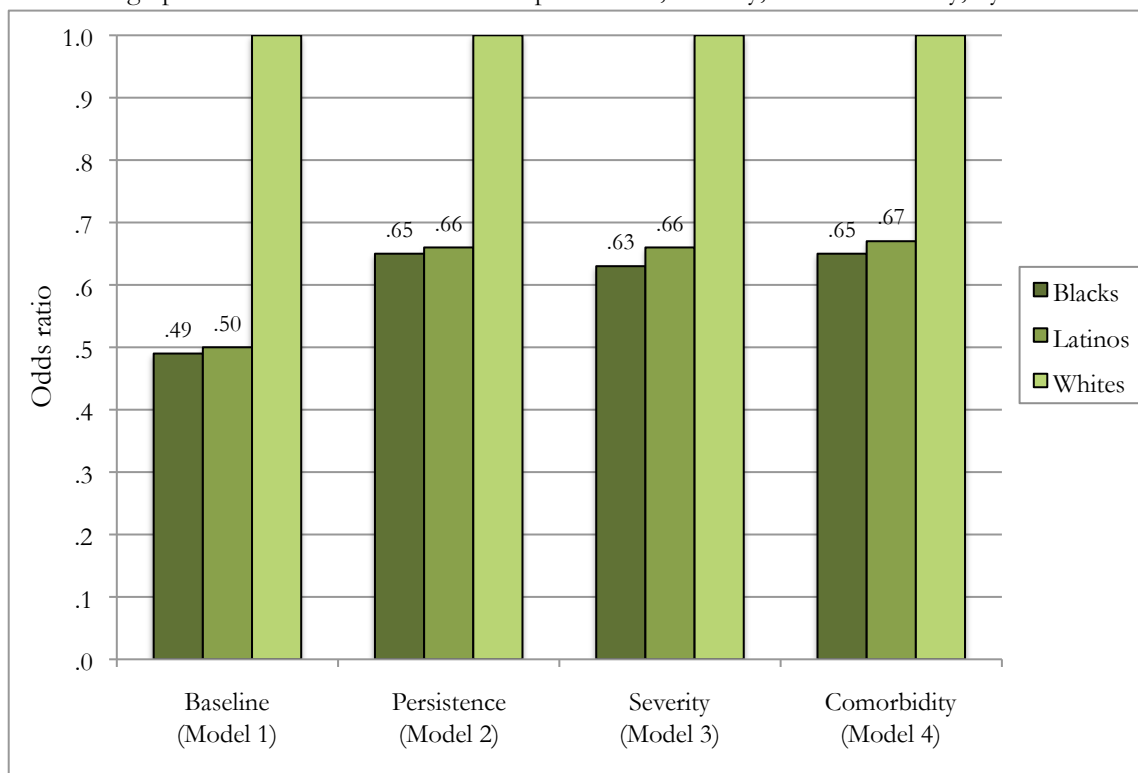
Table 2.4.c. Binomial logistic regression predicting effect of race, socioeconomic and demographic controls, disorder comorbidity, and interaction terms on 12-month mental health service use<sup>a</sup>

Variable	Model 1		Model 4		Model 4.1	
	Race, controls		Race, controls, comorbidity		Race, controls, comorbidity, interactions	
	OR	95% CI	OR	95% CI	OR	95% CI
Intercept	.2***	(.1-.2)	.0	(.0-.1)	.0***	(.0-.1)
Race, Latino (ref white)	.5***	(.4-.6)	.7***	(.5-.8)	.7*	(.5-.9)
Race, black (ref white)	.5***	(.4-.6)	.6***	(.5-.8)	.6***	(.5-.8)
<i>Comorbidity (ref no history of depression/anxiety)</i>						
Depression only			13.4***	(10.2-17.6)	13.2***	(9.5-18.2)
Anxiety only			7.4***	(5.4-10.1)	6.9***	(4.8-9.9)
Depression and anxiety			24.2***	(18.6-31.5)	26.7***	(19.2-36.9)
Latino * depression and anxiety					.6*	(.4-1.0)
[Lifetime disorder]			3.4***	(2.6-4.5)	3.4***	(2.6-4.5)
<i>Socioeconomic characteristics</i>						
Educ., 16+ (ref 12)	1.4*	(1.0-1.8)	1.4°	(1.0-1.9)	1.4°	(1.0-1.9)
Insurance, public (ref none)	1.3*	(1.0-1.6)	1.4**	(1.1-1.7)	1.4**	(1.1-1.7)
<i>Demographic characteristics</i>						
Sex, female	1.7***	(1.4-1.9)	1.4***	(1.2-1.7)	1.4***	(1.2-1.7)
Age, 18-34 (ref 35-49)	.7***	(.6-.9)	.8**	(.6-.9)	.8**	(.6-.9)
Age, 50+ (ref 35-49)	.4***	(.3-.6)	.7***	(.5-.8)	.7***	(.5-.8)
Married, formerly (ref currently)	1.7***	(1.4-2.2)	1.3*	(1.0-1.6)	1.3**	(1.0-1.6)
Married, never (ref currently)	1.4***	(1.1-1.7)	1.3	(.9-1.6)	1.2	(.9-1.6)

<sup>a</sup> Weighted data from the Collaborative Psychiatric Epidemiology Surveys (CPES), 2001-2003; n=10723.

°p≤.10, \*p≤.05, \*\*p≤.01, \*\*\*p≤.001 (two-tailed tests).

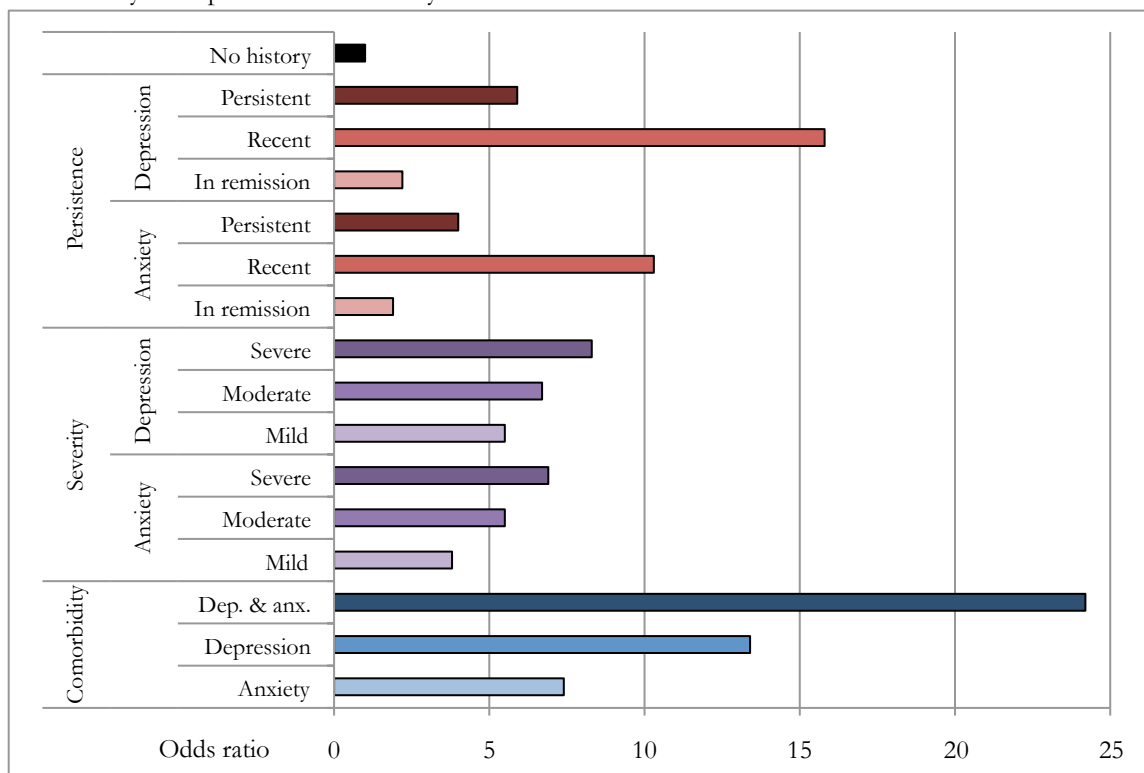
Figure 2.1. Odds ratio of receiving any 12-month mental health services when controlling for sociodemographic characteristics and disorder persistence, severity, and comorbidity, by race<sup>a</sup>



<sup>a</sup> Weighted data from the Collaborative Psychiatric Epidemiology Surveys (CPES), 2001-2003; n=10723.

<sup>b</sup> All odds ratios adjust for socioeconomic (education, work status, insurance status) and demographic (sex, age, region, marital status) characteristics.

Figure 2.2. Odds ratio of receiving any 12-month mental health services, by persistence, severity, and comorbidity of depression and anxiety disorders<sup>a, b</sup>



<sup>a</sup> Weighted data from the Collaborative Psychiatric Epidemiology Surveys (CPES), 2001-2003; n=10723.

<sup>b</sup> All odds ratios adjust for socioeconomic (education, work status, insurance status) and demographic (race, sex, age, region, marital status) characteristics.



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## APPENDIX 2A: SAMPLE AND CELL SIZES

Table 2A.1. Survey sample sizes, by race

Race	Survey			Total
	NCS-R	NLAAS	NSAL	
Latino	883	2554	183	3620
Black	1230	0	5008	6238
White	6696	0	891	7587
Asian	189	2095	0	2284
Other	284	0	0	284
Total	9282	4649	6082	20013

Table 2A.2. Dropped cases, by reason and race

Step	Reason	Race					Total
		Latino	Black	White	Asian	Other	
<i>Full CPES sample</i>		3620	6238	7587	2284	284	20013
1	Asian and other				-2284	-284	-2568
2	NSAL white			-891			-891
3	NSAL skip	-5	-152				-157
4	NCS-R part 1	-356	-513	-2516			-3385
5	Bipolar	-54	-236	-267			-557
6	Other disorder	-333	-655	-700			-1688
7	Missing MHT data		-43	-1			-44
<i>Final analytical sample, ch. 2</i>		2872	4639	3213	0	0	10723



Table 2A.3. Cell sizes for persistence, severity, and comorbidity of depression and anxiety disorders, by race<sup>a</sup>

Variable	Latino	Black	White
<b><i>Disorder persistence</i></b>			
<i>Depression</i>			
In remission	280	314	716
Recent	44	66	73
Persistent	260	259	414
<i>Anxiety</i>			
In remission	209	426	613
Recent	21	26	35
Persistent	381	508	732
<b><i>Disorder severity</i></b>			
<i>Depression</i>			
Mild	72	71	113
Moderate	92	98	185
Severe	142	156	189
<i>Anxiety</i>			
Mild	158	218	377
Moderate	109	175	225
Severe	137	147	165
<b><i>Disorder comorbidity</i></b>			
Depression only	159	191	236
Anxiety only	257	406	516
Depression & anxiety	345	572	932

<sup>a</sup> Unweighted data from the Collaborative Psychiatric Epidemiology Surveys (CPES), 2001-2003.

## APPENDIX 2B: OUTCOME MEASURES

Table 2B.1. Providers and resources constituting the five sectors of mental health service use

Cluster	Sector		Professional/resource
Healthcare (HC)	Mental health specialty (MHS)	Psychiatry (PSY)	Psychiatrist
		Other mental health specialty (OMH)	Psychologist Social worker in mental health setting (e.g., private practice, psychiatric outpatient clinic, drug or alcohol treatment program) Counselor in mental health setting (e.g., private practice, psychiatric outpatient clinic, drug or alcohol treatment program) Other mental health professional (e.g., psychotherapist) Mental health crisis hotline
	General medical (GM)		General practitioner or family doctor Other medical doctor (e.g., cardiologist, gynecologist, urologist) Nurse, occupational therapist, or other health professional
Non-healthcare (non-HC)	Human services (HS)		Social worker in non-MH setting (e.g., hospital emergency room, social service agency, prison) Counselor in non-MH setting (e.g., hospital emergency room, social service agency, prison) Religious or spiritual advisor (e.g., minister, priest, rabbi)
	Complementary-alternative medicine (CAM)		Other healer (e.g., herbalist, spiritualist, chiropractor, acupuncturist) Self-help group Internet support group

## APPENDIX 2C: SUPPLEMENTAL ANALYSES

Table 2C.1. Binomial logistic regression predicting effect of race, socioeconomic and demographic controls, perceived need for treatment, and interaction terms on 12-month mental health service use<sup>a</sup>

Variable	CPES model 1		NCS-R model 1		NCS-R model 2		NCS-R model 2.1	
	Race, controls	95% CI	OR	95% CI	Race, controls, perceived need	95% CI	Race, controls, perceived need, interactions	95% CI
Intercept	.2***	(.1-.2)	.2***	(.1-.3)	.0***	(.0-.0)	.0***	(.0-.0)
Race, Latino (ref white)	.5***	(.4-.6)	.5**	(.3-.8)	.4***	(.2-.6)	.5	(.2-1.5)
Race, black (ref white)	.5***	(.4-.6)	.5***	(.3-.7)	.3***	(.2-.6)	.5	(.2-1.5)
Self-perceived need					117.3***	(83.3-165.1)	126.2***	(88.4-180.1)
Latino * SPN							.7	(.2-2.4)
Black * SPN							.6	(.2-1.6)
<i>Socioeconomic characteristics</i>								
Educ., 16+ (ref 12)	1.4*	(1.0-1.8)	1.5*	(1.0-2.0)	1.0	(.7-1.4)	1.0	(.7-1.4)
Insurance, private (ref none)	.8 <sup>o</sup>	(.7-1.0)	.8*	(.6-.9)	1.2	(.9-1.8)	1.2	(.9-1.8)
Insurance, public (ref none)	1.3*	(1.0-1.6)	1.3*	(1.0-1.5)	1.7**	(1.2-2.5)	1.7**	(1.2-2.5)
<i>Demographic characteristics</i>								
Sex, female	1.7***	(1.4-1.9)	1.7***	(1.4-2.0)	1.0	(.7-1.3)	1.0	(.7-1.3)
Age, 18-34 (ref 35-49)	.7***	(.6-.9)	.9	(.7-1.0)	.6*	(.4-.9)	.6*	(.4-.9)
Age, 50+ (ref 35-49)	.4***	(.3-.6)	.5***	(.4-.6)	.8	(.6-1.1)	.8	(.6-1.1)
Married, formerly (ref currently)	1.7***	(1.4-2.2)	1.7***	(1.3-2.2)	1.2	(.9-1.8)	1.2	(.8-1.8)
Married, never (ref currently)	1.4***	(1.1-1.7)	1.3*	(1.0-1.7)	1.3	(.9-2.0)	1.3	(.9-2.0)

<sup>a</sup> Weighted data from the Collaborative Psychiatric Epidemiology Surveys (CPES) and National Comorbidity Survey Replication (NCS-R), 2001-2003; n=10723 and 7303, respectively.

<sup>o</sup>p≤.10, \*p≤.05, \*\*p≤.01, \*\*\*p≤.001 (two-tailed tests).

### **Chapter 3: Race, need for services, and site(s) of care: Multi-sector profiles and their therapeutic capacities among Latino, black, and white service users**

#### **ABSTRACT**

**OBJECTIVES:** This study examines the impact of race and need for services on the multi-sector service profiles used by individuals receiving mental health services in the preceding 12 months.

**DATA:** Data are from the Collaborative Psychiatric Epidemiology Surveys (CPES) project, a representative survey of mental health and mental health service use among American adults. Due to oversampling of nonwhites, the analytic sample includes large numbers of Latino (n=347), non-Latino black (n=415), and non-Latino white (n=737) service users.

**METHODS:** Six mutually exclusive service profiles potentially involved use of multiple sectors and were defined on the basis of their capacity to deliver combined psycho- and pharmacotherapies (psychiatry profile, other mental health specialty with general medical profile), psychotherapy only (other mental health specialty profile), pharmacotherapy only (general medical profile), or no therapy (human services profile, complementary-alternative medicine profile). Need for services was based on the persistence, severity, and comorbidity of mental disorders.

**RESULTS:** There were no statistically significant differences between Latino and white service users. Compared to whites, black service users were less likely to use services capable of delivering pharmacotherapy only and more likely to use services capable of delivering neither psycho- nor pharmacotherapy. Service need was associated with use of services capable of providing combined therapies.

**CONCLUSIONS:** Policies should enable and encourage depressed and anxious individuals, especially blacks, to seek mental health services from highly qualified providers.

## INTRODUCTION

The analyses presented in the preceding chapter replicated significant race disparities in rates of mental health (MH) service use commonly found in services research. Because of the relatively high prevalence of depression and anxiety disorders, analyses focused on treatment received for these ailments by eliminating respondents with the more serious bipolar spectrum disorders and respondents who only had substance use disorders.<sup>1</sup> Consisting only of respondents with depression or anxiety and respondents with no disorders, the sample was somewhat different from samples usually used in otherwise similar research. However, as in previous studies, the Latino- and black-white disparities persisted even in analyses that controlled for the considerable racial variation in socioeconomic and demographic characteristics. Furthermore, although the primary aim of the preceding set of analyses was to examine possible *interactions* between race and need for treatment – rather than the possible mediating role of need – results did show that race differences persisted also in analyses that accounted for measures of what Andersen (1968, 1995) has referred to as evaluated, as opposed to perceived, need.<sup>2</sup>

In these preceding analyses, the outcome measure was a simple dichotomous indicator of any MH service use in the 12 months prior to interview. An inclusive measure, it defined 12-month service use as a mental health related visit to any of a number of professionals, a call to a mental health hotline, or participation in a mental health related self-help or Internet support group. This is consistent with measures generally used in services research, recognizing psychiatry (PSY), other mental health specialty (OMH), general medical (GM), human services (HS), and complementary-

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<sup>1</sup> Respondents whose substance use disorders were comorbid with depression and/or anxiety were included in the analyses. The disorders included in the study were dysthymic and major depression, panic disorder, agoraphobia (with or without panic), social phobia, generalized anxiety disorder (GAD), and posttraumatic stress disorder (PTSD). Due to inconsistent assessment across the three surveys, if they did not have one of the above disorders, respondents with any of the following disorders were also eliminated: intermittent explosive, oppositional-defiant, conduct, separation anxiety or adult separation anxiety disorders, or specific phobia. Altogether, 392 (10.8%) Latino, 700 (14.4%) black, and 1041 (13.7%) white respondents were dropped from the analyses.

<sup>2</sup> Although large amounts of missing data had precluded the possibility of analyzing the role of self-perceived need for treatment, supplemental analyses showed that controlling for respondents' perceived need reduced but did not eliminate the effects of Latino and black race.

alternative medicine (CAM) sectors as viable venues for mental health treatment. Sectors are not mutually exclusive, and individuals often receive services within multiple sectors.<sup>3</sup>

However, services research also recognizes that providers are not created equal. For example, non-psychiatrist mental health professionals have had specialized training in the provision of various psychotherapeutic treatments, including specific approaches such as cognitive-behavioral therapy and more general approaches such as those focused on family dynamics. On the other hand, armed with prescribing powers, non-psychiatrist physicians are capable of providing patients with pharmacological treatment for many conditions, including mental disorders. With both mental health specialty and medical training, psychiatrists are uniquely capable of providing combination psycho- and pharmacotherapeutic care.

Using available evidence-based treatment guidelines, previous studies have established clear standards for minimally adequate treatment for psycho- and pharmacotherapy.<sup>4</sup> Briefly, psychotherapy must consist of eight or more sessions lasting on average at least 30 minutes. Studies differ with regard to the providers presumed to be capable of rendering psychotherapy, as some restrict it to MHS providers only while others include GM and HS providers as well. Pharmacotherapy must consist of four or more doctor visits and use of an appropriate psychotropic medication,<sup>5</sup> and can only be rendered by psychiatrists and other physicians.

Since I consider treatment adequacy – whether the professionals who *could* provide adequate psycho- and pharmacotherapy actually *do* – in the next chapter, I will not go into greater detail about it here. However, different sectors' differential capacity for delivering these psycho- and pharmacotherapies is an important motivator for the analyses I present in this chapter. This is in part because some studies have found significant race differences in the settings in which individuals receive services, with a general trend toward blacks and Latinos using sectors with limited or no

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<sup>3</sup> See Table 3B.1 for a review of the professionals and resources constituting each of the five sectors of mental health service use.

<sup>4</sup> Included in some studies (e.g., Wang et al., 2005), self-help can only be adequate for substance use disorders and is not considered here.

<sup>5</sup> In different studies, the requisite term for medication use is 30+ days, 60+ days, or unspecified. Appropriate medications are antidepressants for depression and antidepressants or anxiolytics for anxiety disorders.

therapeutic capacities (e.g., Alegria et al., 2002; Kimerling & Baumrind, 2005; Ojeda & McGuire, 2006). It appears some of these differences may be a function of consumer choice. For example, blacks seem to have a strong preference for informal and religious support (Neighbors et al., 1983; Neighbors & Jackson, 1984; Woodward et al., 2008). However, race differences in access to qualified professionals should not be overlooked. For example, the poor urban and (in the South) rural areas in which blacks and Latinos tend to concentrate are burdened by considerable shortages in healthcare providers, and available providers are often of relatively poor quality (Goldsmith et al., 1997; Holzer, Goldsmith & Ciarlo, 1998; Merwin et al., 2003; Bach et al., 2004).

Accordingly, I disaggregate the previous chapter's composite measure of service use into its component parts and take a closer look at the specific loci in which mental health services are received. Restricting analyses to Collaborative Psychiatric Epidemiology Surveys (CPES) respondents who used any 12-month services (n=1499), I address four aims. First, drawing upon a recent study (Wang et al., 2006), I go beyond studying individual sector use to examine six mutually exclusive profiles of care. Using Wang et al.'s (2006) innovative outcome measure, my analyses control for demographic and socioeconomic characteristics to examine the role of race in predicting use of each of the six service profiles. Second, since Wang et al. (2006) defined the profiles in terms of their capacity for delivering different therapeutic modalities – psychotherapy (1 profile), pharmacotherapy (1 profile), both (2 profiles), or neither (2 profiles) – I combine similarly “capable” profiles into a four-category measure of therapeutic capacity, or therapy/ies a respondent could have received in his service use profile. I do so by using the predictors in aim 1 to predict use of each of the four therapeutic capacities and comparing the two sets of results. Analyses in all subsequent aims use the therapeutic capacity measure. Third, I examine the impact of evaluated need for treatment, going beyond Wang et al.'s (2006) analysis of the role of disorder severity by adding measures of disorder persistence and comorbidity. Fourth, I look for interactions between race and these three measures of evaluated need.

## **LITERATURE REVIEW**

While studies often use the sort of composite measure of mental health treatment used in the preceding chapter, services researchers have also long taken an interest in the particular milieu in which this treatment takes place. It is not surprising, then, that a number of studies have already looked at the relationship between race and sector choice. Some have focused on single sectors by, for example, highlighting blacks' reliance on religious advisors in the HS sector (Neighbors, Musick & Williams, 1998) or examining race differences in reasons for CAM use (Chao et al., 2006). Others have considered all sectors at once by, for example, examining race differences in the likelihood of using each (Kessler et al., 2005b). While they have acknowledged the possibility and probability of multi-sector use, these studies have done little to address it methodologically. As such, their conclusions cannot directly map onto my analyses, but they offer important insight into the relationship between race and choice of provider. As such, I review some of the key findings of these studies below, and then segue into an explanation of the recent Wang et al. study on which my analyses are based. My explication of the study focuses on the construction of the aforementioned innovative outcome measure, as well as on its findings with regard to the roles of race and severity. I conclude with mention of several other studies that have assessed the relationship between severity and sector choice.

## **RACE AND TREATMENT SECTOR**

Previous studies of the relationship between race and treatment sector have found several differences. They have shown, for example, that blacks and Latinos are more likely to seek services in the non-healthcare cluster (i.e., HS and CAM sectors). In general, they tend to prefer an approach based on self-reliance and informal help from family and friends (Milburn & Bowman, 1991; Broman, 1996; Peifer, Hu & Vega, 2000; DHHS, 2001), and when they do reach out beyond their immediate circles, they often go no further than trusted spiritual advisors. The tendency to seek clerical counsel has been noted among Latinos (Peifer, Hu & Vega, 2000), but it is especially predominant among blacks. Due to high religiosity, blacks are considerably more likely than whites to



engage in all forms of religious coping, including praying and seeking religious counsel (Neighbors & Jackson, 1984; Levin, 1986; Taylor & Chatters, 1991; Neighbors, Musick & Williams, 1998; Chatters et al., 2008).

While religious faith can certainly be a source of strength in times of trouble and may help ameliorate common emotional symptoms, especially in bereavement (Frantz, Trolley & Johll, 1996; Walsh et al., 2002), blacks' and Latinos' affinity for pastoral care is potentially problematic for several reasons. Although they are often consulted by parishioners in serious distress, clergy are generally ill-prepared to deal with these parishioners' mental health problems (Weaver, 1995; Farrell & Goebert, 2008). Yet, communication and collaboration between clergy and mental health professionals is limited (Blank et al., 2002; Leavey & King, 2007). Though they often realize their training in recognizing and treating mental illness has been inadequate (Farrell & Goebert, 2008), clergy rarely refer parishioners to psychiatrists or other healthcare providers (Lowe, 1986; Moran et al., 2005). Perhaps because of this reluctance to refer, individuals who seek help from clergy first are less likely to subsequently seek help from healthcare cluster providers, regardless of the severity of their problems. (Neighbors, Musick & Williams, 1998). Importantly, as per the Wang et al. (2006) article on which this chapter is largely based, neither clergy nor the social workers and counselors also included in the HS sector can provide the psycho- or pharmacotherapeutic care described above.

The other half of the non-healthcare cluster is the CAM sector. There are several reasons to expect that, like pastoral care, CAM therapies might be more common among racial minorities. For example, CAM care is often rendered by traditional healers, whose practices are deeply rooted in cultural tradition. They are also frequently less expensive than conventional medical treatments, an impetus found to be especially salient among Latinos (Graham et al., 2005; Chao et al., 2006). Finally, because they are positioned outside of the medical establishment, practitioners are unlikely to be subject to minorities', especially blacks', mistrust of white clinicians (Whaley, 2001). In the absence of systematic studies of the use of CAM therapies, these reasons once led the Surgeon General to speculate that these alternative treatments might be more popular among blacks and Latinos (DHHS,

2001). However, in recent years, a dramatic increase in CAM's popularity (Eisenberg et al., 1998; Kessler et al., 2001a; Tindle et al., 2005) has led to extensive study of its use, which has not confirmed these speculations.

These studies have found that, while use of CAM for mental health problems is quite common (Knaudt et al., 1998; Unützer et al., 2000; Kessler et al., 2001b), blacks and Latinos may actually be less likely than whites to seek these services. For example, analyses of data from the National Comorbidity Survey (NCS) and NCS Replication (NCS-R) showed Latinos and blacks less likely to use CAM than whites, though the differences were not statistically significant (Kessler et al., 2005b). Results from a survey specifically intended to assess CAM use among American women showed depressed blacks and Latinas were less likely to use CAM therapies than similar whites, although the Latina-white difference was not statistically significant (Wu et al., 2007). Additionally, although CAM may seem like a last resort – to be entertained only once conventional medicine has disappointed – this assumption has not held up in empirical analyses, which have found that CAM users are driven less by dissatisfaction with conventional medicine and more alternative medicine's congruence with their values and worldviews (Astin, 1998).

As such, while studies have found that, like clergy, CAM providers rarely refer patients to providers in the healthcare cluster (Simon et al., 2004), blacks and Latinos are not likely to be disproportionately affected by their failure to refer. Moreover, studies show that, unlike seeking religious counsel, using CAM therapies does not appear to impact use of conventional medical care. Individuals using alternative therapies for their mental health problems are as likely to receive conventional mental health care as those not using CAM (Unützer et al., 2000), and less than 5% of CAM users rely on alternative therapies as their sole source of care (Astin, 1998). Since this is not due to CAM practitioners' and clergy's differential rates of referral, it may be because individuals who ultimately receive both alternative and conventional medical services tend to seek the latter first and need not be referred, or that use of both types of services is determined by similar predictors.

In fact, there does appear to be a degree of overlap between predictors of the use complementary-alternative and conventional medicine. Studies show that sociodemographic predictors of overall CAM use – that is, for mental and/or medical problems – seem to vary, depending on the conditions treated, the practices considered, and the like. CAM use specifically for mental health problems, however, tends to be more common among whites, men, the highly educated, and the privately insured (Unützer et al., 2000). These sociodemographic characteristics appear to be associated with outpatient care in the healthcare cluster as well, both when outcome measures include primary care visits and when they are restricted to specialist visits only (Alegria et al., 2002; Kessler et al., 2005b; Wang et al., 2005; Ojeda & McGuire, 2006).

Focusing on race, studies indeed regularly find Latinos and blacks to be less likely than whites to seek care in the healthcare cluster, a tendency due at least in part to the aforementioned shortages of healthcare professionals in poor urban and rural areas (Goldsmith et al., 1997; Holzer, Goldsmith & Ciarlo, 1998; Merwin et al., 2003; Bach et al., 2004). Notably, studies find this tendency is especially pronounced in terms of specialty care. In studies that differentiate between treatment received in different sectors, both blacks and Latinos are consistently less likely to report treatment rendered by psychiatrists and other mental health specialists (Hough et al., 1987; Padgett, Patrick & Burns, 1994; Padgett et al., 1994; Gallo et al., 1995; Alegria et al., 2002; Kimerling & Baumrind, 2005; Ojeda & McGuire, 2006).

Importantly, most of the studies that have found blacks and Latinos less likely to use complementary-alternative and/or conventional medicine evaluated the likelihood of use of a given sector *relative to non-use of that sector among all respondents*, not *relative to use of another sector among users only*. Since blacks and Latinos are significantly less likely to seek *any* mental health services, it is not surprising that these studies have also tended to find them less likely to seek services in *specific sectors*.<sup>6</sup> However, two recent studies did examine individual sector use among respondents who reported use

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<sup>6</sup> As shown in Table 3C.1 in Appendix 3C, supplemental analyses that included all respondents (n=10723) showed blacks and Latinos less likely than whites to use the PSY, OMH, GM, and CAM sectors ( $p<.05$ ). The lack of significant Latino- and black-white differences in HS sector use underscores Latinos' and blacks' tendency to use this sector more than whites.

of at least one sector. While neither study focused on race as a key predictor, both presented findings on the influence of various sociodemographic characteristics.

First, using pooled data from the NCS and NCS-R, Kessler et al. (2005b) found only two significant race differences. Latinos were less likely than whites to have called upon the services of a psychiatrist, and blacks were more likely than whites to have received services in the HS sector (Kessler et al., 2005b). Similarly, using NCS-R data, Wang et al. (2005) examined the predictors of healthcare treatment among respondents with any treatment and the predictors of specialty treatment among respondents with healthcare treatment. They found black service users to be significantly less likely than comparable whites to have received their services in the healthcare cluster, but race was not a significant predictor of specialty service use among those who did receive healthcare services (Wang et al., 2005).

These findings might seem discrepant with common concerns, including in the Surgeon General's comprehensive report on culture and mental health (DHHS, 2001), about blacks' and Latinos' reliance on primary care providers (PCPs). However, a number of the studies on which claims about Latino overreliance on PCPs have been based compared the Latino probability of *GM* treatment to the Latino probability of *MHS* treatment, not the *Latino* probability of GM treatment to the corresponding probability among *whites* (Alegria et al., 1991; Vega et al., 1999; Vega, Kolody & Aguilar-Gaxiola, 2001; Wells et al., 2001). Thus, what they found was that Latinos were more likely to see generalists than to see specialists, not necessarily that they were more likely to see generalists than were whites.

In turn, some of the studies underlying claims about black overreliance on PCPs found that blacks were more likely to see a PCP while whites were more likely to see a psychiatrist, but the conclusions were based on patients with depression (Cooper-Patrick, Crum & Ford, 1994; Pingitore et al., 2001). Another found that both blacks and whites were more likely to see PCPs than psychiatrists but the tendency was stronger among blacks (Snowden & Pingitore, 2002). Of these, Pingitore et al. (2001) and Snowden and Pingitore (2002) used data from the National Ambulatory

Medical Care Surveys (NAMCS), which samples physicians' office patient records, not individuals, and this may also account for the discrepancy with findings from the NCS and NCS-R.

In short, it appears that great variation in methodology has largely resulted in great variation in findings regarding the relationship between race and service sector use. Differences in data collection (e.g., clinical records vs. community surveys), sample selection criteria (e.g., all respondents regardless of "caseness" vs. depressed cases, all respondents regardless of service use vs. service users only), and types of comparisons (e.g., between-race comparisons of specialist use vs. within-race comparisons of specialist/generalist use) have produced an incoherent picture of this important relationship.

#### **AN INNOVATIVE MEASURE**

More recently, Wang et al. (2006) have pooled NCS and NCS-R data to analyze use of what they termed multi-sector profiles of care. Like most services research, they recognized the five aforementioned sectors, and used respondent treatment sector data to construct six mutually exclusive treatment profiles, all but the last of which could potentially involve use of multiple sectors. The psychiatry profile consisted of any use of the psychiatry sector. The OMH+GM profile consisted of use of both the OMH and GM sectors without use of the PSY sector. The OMH-only profile consisted of use of the OMH sector without the PSY or GM sector. The GM-only profile consisted of use of the GM sector without the PSY or OMH sector. The HS-only profile consisted of use of the HS sector without the PSY, OMH, or GM sector. Finally, the CAM-only profile consisted of use of the CAM sector without any other sector.

Although they did not focus on the role of race, Wang et al. (2006) did report findings regarding sociodemographic predictors of use of the six profiles. Restricting analyses to service users only, they found few significant race differences. Latinos were less likely than whites to use the PSY and CAM-only profiles, and both Latinos and blacks were more likely than whites to use the HS-only profile (Wang et al., 2006). As such, while blacks and Latinos were less likely to seek services in the

first place, once they did so, they were fairly similar to whites in the treatment profiles to which they turned.

In this chapter, I expand upon Wang et al.'s work in several ways. Because of my focus on race, I take full advantage of the merged CPES dataset, which includes large numbers of Latino respondents from the National Latino and Asian American Study (NLAAS) and black respondents from the National Survey of American Life (NSAL). I expect that the enhanced statistical power afforded by use of this dataset may uncover significant differences that had appeared insignificant in Wang et al.'s analyses. Additionally, Wang et al. noted that the six profiles represented four differential capacities for the provision of psychotherapeutic and pharmacotherapeutic modalities, so I attempt to further enhance statistical power by subsequently combining similarly "capable" profiles (PSY with OMH+GM, and HS-only with CAM-only). I expect to find general overlap between significant sociodemographic predictors of the use of similarly capable profiles, and expect to be able to use this measure to examine interactions between race and need for services.

#### **THE IMPACT OF NEED**

Notably, one of Wang et al.'s (2006) aims had been to examine whether use of specific profiles varied by disorder severity. This is a pressing question, in light of the greater need for effective treatment among severe cases and evidence that combined psycho- and pharmacotherapeutic treatment is associated with the greatest improvements (e.g., Pampallona et al., 2004; Hollon et al., 2005; de Maat et al., 2007; Cuijpers et al., 2009) and lowest dropout rates (Edlund et al., 2002). Indeed, they found a positive relationship between disorder severity and use of the PSY profile, suggesting that respondents with severe disorders are significantly more likely to use this profile than any other.

Similar associations between severity and use of providers with specific training in psycho-, pharmaco-, or combination therapies have been found in other studies as well. For example, analyzing use of three treatment profiles – GM-only, MHS-only, and GM+MHS – Uebelacker et al. (2006) expectedly found monotonic relationships between severity and probability of treatment in all

three profiles. This relationship was strongest in the GM+MHS profile, where severe cases were 50 times more likely to receive services than non-cases. GM+MHS treatment was also especially high among respondents with three or more mental disorders, and it was more closely associated with mood than with anxiety disorders. Similarly, although their analyses were limited to Latinos only, Vega, Kolody, and Aguilar-Gaxiola (2001) found individuals with one or more disorders to be more likely to use a combination of GM and MHS services, and Pescosolido et al. (1998) found that individuals with the most serious mental health problems tended to combine the most sources of care.

In my analyses, I consider not only the role of severity, but also expand the notion of need to include measures of illness persistence and comorbidity. I expect to replicate previous findings that use of the most capable profiles – PSY and OMH+GM – is correlated with illness severity. I expect use of these profiles to be more closely related to depression than to anxiety disorders, but to be most closely related to comorbid depression and anxiety. Following findings from the previous chapter, which showed treatment rates to be higher among recent than persistent cases, I also expect use of these profiles to be more closely related to recent disorders than to persistent ones. Because of the dearth of significant interaction terms in the preceding chapter's analyses, I expect these three measures of evaluated need for treatment will have similar effects on the use of variously “capable” profiles across the three race groups.

## **HYPOTHESES**

In summary, I evaluate three hypotheses. I expect to find, first, that there are few race differences in the multi-sector profiles in which respondents seek services. However, if differences do emerge, I expect they will be in a direction that is disadvantageous to black and Latino respondents. In other words, blacks and Latinos will be less likely to use profiles with the greatest therapeutic capacity (i.e., combined psycho- and pharmacotherapies) and more likely to use profiles with no therapeutic capacity at all (i.e., neither psycho- nor pharmacotherapy). Second, I expect need for treatment to be positively associated with use of the most “capable” profiles and negatively

associated with use of the least “capable” ones. Third, based on findings in chapter 2, I expect the influence of need for services to be largely the same in all race groups.

## **DATA, VARIABLES, AND METHODS**

### **DATA**

As in the previous chapter, my analyses utilized data from the CPES project, which comprised the aforementioned NCS-R, NLAAS, and NSAL. The NLAAS oversampled Latino and Asian Americans, while the NSAL oversampled African-American and Caribbean blacks. The core questionnaire was the World Health Organization’s World Mental Health Survey Initiative’s version of the Composite International Diagnostic Interview (CIDI), a standardized psychiatric diagnostic instrument designed for administration by lay interviewers (Kessler & Üstün, 2004).

In the NCS-R, the core diagnostic assessment in part 1 was administered to all 9282 respondents, but additional sections in part 2 were administered to only 5692 these respondents, oversampling individuals with clinically significant psychopathology (see Kessler et al., 2004, 72).

All three surveys used a multi-stage area probability sampling design, as described in the previous chapter and elsewhere (Heeringa et al., 2004). All three included non-institutionalized adults aged 18 years and older residing in U.S. households. However, while the NCS-R and NSAL sampled only English-speaking residents of the coterminous U.S., NLAAS included speakers of Spanish and several Asian languages and expanded its sample to include residents of Hawaii. Data were collected between 2001 and 2003, primarily using the computer-assisted personal interview (CAPI) method.

As in the preceding chapter, cases from the full 20013 sample were dropped in a series of steps. Steps 1 through 7 are the same as in chapter 2, but step 8 restricts the previous sample of 10723 respondents to the 1499 respondents who received services in the 12 months prior to interview.<sup>7</sup> Steps are summarized below, along with number of cases dropped and percentage in parentheses.

**Step 1.** 2284 Asian and 284 other respondents were dropped.

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<sup>7</sup> See Table 3A.1 in Appendix 3A for summary of reason and number of cases dropped in each step.



**Step 2.** 891 (11.7) NSAL whites who skipped the services section were dropped.

**Step 3.** 5 (.1) Latino and 152 (2.4) black NSAL respondents who could not commit to complete the survey were dropped.

**Step 4.** 356 Latino (9.8), 513 (8.2) black, and 2516 (33.2) white respondents in NCS-R part 1 were dropped.

**Step 5.** 54 (1.5) Latino, 236 (3.8) black, and 267 (3.5) white respondents with any history of bipolar disorder were dropped.<sup>8</sup>

**Step 6.** 333 (9.2) Latino, 655 (10.5) black, and 700 (9.2) white respondents with any history of any other assessed disorder but no history of major or dysthymic depression, panic disorder, agoraphobia, social phobia, generalized anxiety disorder (GAD), or posttraumatic stress disorder (PTSD) were dropped.<sup>9</sup>

**Step 7.** One white and 43 (.7) black respondents without valid service use data were dropped.

**Step 8.** 2525 (69.8) Latino, 4224 (67.7) black, and 2475 (32.6) white respondents with no 12-month MH service use were dropped.

The final analytic sample consisted of 1499 respondents – 347 (9.6%) Latinos, 415 (6.7%) non-Latino blacks, and 737 (9.7%) non-Latino whites.

## **VARIABLES**

### **DEPENDENT VARIABLES**

There were two related outcome measures – 12-month multi-sector service profile and corresponding therapeutic capacity.

The CIDI included an extensive section on services, which asked respondents about the types of MH services they had used in the preceding 12 months. These data were first used to create

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<sup>8</sup> Since bipolar spectrum disorders tend to be particularly severe (e.g., Kessler et al., 2005a), respondents with any history of them were dropped regardless of comorbidity with dysthymic depression or anxiety, in order to avoid biasing results.

<sup>9</sup> Other disorders included substance use (assessed in all three surveys), intermittent explosive disorder (NCS-R, NLAAS), oppositional-defiant, conduct, separation anxiety, and adult separation anxiety disorders (NCS-R, NSAL), and specific phobia (NCS-R). Unlike bipolar cases, who were dropped regardless of depression/anxiety history, respondents with these other disorders were dropped only if they had no history of depression and/or the anxiety disorders included in my analyses.

five dichotomous indicators for the PSY, OMH, GM, HS, and CAM sectors. As mentioned before, respondents could report use of more than one sector. Following Wang et al. (2006), individual sector use was then used to determine the *12-month multi-sector service profile*. The PSY profile was defined as any use of the PSY sector. The OMH+GM profile was defined as use of both the OMH and GM sectors without the PSY sector. The OMH-only profile was defined as use of the OMH sector without the PSY or GM sector. The GM-only profile was defined as use of the GM sector without the PSY or OMH sector. The HS-only profile was defined as use of the HS sector without the PSY, OMH, or GM sector. Finally, the CAM-only profile was defined as use of the CAM sector without any other sector.<sup>10</sup>

As Wang et al. (2006) note, each of these multi-sector profiles represents a particular capacity for delivering psychological and pharmacological therapies. While I take up the issue of whether various providers actually deliver the therapies for which they have been trained in the next chapter, I sought to maximize statistical power by combining profiles with similar capacities for service provision. As such, I created a measure of *12-month service therapeutic capacity*, by combining (1) the PSY and OMH+GM profiles to reflect capacity to deliver combined pharmacological and psychotherapies and (2) the HS- and CAM-only profiles to reflect an incapacity to provide either.

Although the GM- and OMH-only profiles were both capable of providing a single therapeutic modality, I kept the distinction between them intact, because psycho- and pharmacotherapies differ in important ways and because previous studies have found links between race and therapeutic preference (e.g., Dwight-Johnson et al., 2000; Cooper et al., 2003). Also, while both therapeutic approaches can be effective, previous studies have found that the OMH sector is much more likely to provide adequate psychotherapy than the GM sector is to provide adequate pharmacotherapy (e.g., Wang et al., 2005). Although I address this issue directly in the next chapter, it provided another argument against grouping the OMH- and GM-only profiles together to create a “single modality” category.

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<sup>10</sup> See Table 3B.2 in Appendix 3B for summary of sectors required, allowed, and excluded for each multi-sector profile.

The six multi-sector profiles and four corresponding therapeutic capacities were both mutually exclusive.

My aim in creating the therapeutic capacity measure was to determine whether similarly capable profiles could be combined without considerable loss of significant predictors. Since only a few significant sociodemographic predictors of *multi-sector profile* were found to be insignificant predictors of *therapeutic capacity*, I concluded the profiles could, in fact, be combined. The ability to combine them was especially valuable considering the fact that limiting analyses to respondents who had reported 12-month MH service use greatly reduced the sample size.

### **INDEPENDENT VARIABLES**

Independent variables included race, socioeconomic characteristics, and evaluated need for treatment.

**Race** was coded into Latino, non-Latino black, and non-Latino white (reference group).

#### **Socioeconomic characteristics**

Socioeconomic characteristics included education, work status, and insurance coverage. **Education** was based on years of schooling and coded into 0 to 11 years, 12 years (reference group), 13 to 15 years, and 16 years or more. **Work status** was coded as employed (reference group), unemployed, or out of the workforce. Finally, as a proxy for access to care, **insurance coverage** was coded as private, public, other, or uninsured (reference group). Private insurance included coverage provided by a current or past employer or union, either directly to the respondent or to a family member. Public insurance included Medicare, Medicaid, and military insurance. Other insurance included plans purchased directly from insurance companies on the individual market and supplemental insurance such as Medigap. Respondents could report multiple sources of insurance.

#### **Need for treatment**

As in the previous chapter, evaluated need for treatment was operationalized by persistence, severity, and comorbidity. Unlike the previous chapter, which had used two sets of persistence and

severity measures for depression and anxiety disorders, this chapter used one set of global measures of overall illness persistence and severity.

As before, persistence was first determined individually for each disorder and subsequently combined into one global measure of *illness persistence*, which was coded into in-remission, recent, persistent, and no history of illness (reference group). Primacy was given to persistence, so that respondents who had both lifetime and 12-month disorders were considered to have persistent illness, even if the specific disorders were different over time.

Measured for 12-month disorders only, severity was also first determined individually for each disorder and then combined into a global measure of overall *illness severity*, which was coded into mild, moderate, severe, and no 12-month illness. Primacy was given to severity, so that respondents with some mild/moderate and some severe 12-month disorders were considered to have severe illness. As in the previous chapter, a lifetime indicator was added to the multivariate analyses to differentiate between those with lifetime but not 12-month illness and those with no illness history (multivariate analysis reference group).

Finally, measured for 12-month disorders only, *illness comorbidity* was coded into depression only, anxiety only, comorbid depression and anxiety, and no 12-month illness. Multivariate analyses of the impact of illness comorbidity also included the aforementioned lifetime indicator, to differentiate between those with lifetime illness history and those with no illness history (multivariate analysis reference group).

## CONTROL VARIABLES

All analyses controlled for demographic characteristics, including sex, age, region of residence, and marital status. *Sex* was an indicator for females, with males as the reference group. *Age* was recoded into three categories for respondents aged 18-34, 35-49 (reference group), and 50 and over. *Region of residence* included Northeast (reference group), Midwest, South, and West. Finally, *marital status* consisted of married/cohabiting (reference group), divorced/separated/widowed, and never married.

## METHODS

Two sets of bivariate analyses accounted for complex design with population-weighted estimates adjusted for differential probabilities of selection, nonresponse, and poststratification (for more on CPES weighting procedures, see Heeringa & Berglund, 2004), using the Taylor series linearization method implemented in SPSS (SPSS Inc., 2009). The Rao-Scott chi-square test of association was used to obtain corresponding design-based F statistics. First, Table 3.1 compares the distributions of socioeconomic and demographic characteristics across racial groups, among all respondents and among respondents reporting service use. Second, Tables 3.2 and 3.3 present, respectively, the distributions of the six multi-sector profiles (Table 3.2) and of the four corresponding therapeutic capacities (Table 3.3) by race, socioeconomic and demographic characteristics, and need for treatment.

Multivariate analyses consisted of complex-design-adjusted logistic regressions, with t-tests for all parameters, using the Taylor series linearization method in SPSS (SPSS Inc., 2009). Table 3.4 uses race and socioeconomic and demographic characteristics to predict use of the six multi-sector profiles of care (aim 1), while Table 3.5 uses the same independents – race and socioeconomic and demographic characteristics – to predict use of the corresponding therapeutic capacities (aim 2). Then, Tables 3.6.a through 3.6.c use illness persistence, severity, and comorbidity, along with race and socioeconomic and demographic characteristics, to predict use of the four therapeutic capacities (aim 3). Finally, because interaction term standard errors were too large, I estimated the four sets of models – for socioeconomic characteristics, persistence, severity, comorbidity – separately for Latinos, blacks, and whites. While I could not conduct formal significance tests, I sought to compare the separate Latino, black, and white models with the goal of noting general trends (aim 4). The results of these analyses are not shown.

## RESULTS

### RACE AND OTHER SOCIODEMOGRAPHIC CORRELATES

Table 3.1 shows that, compared to all respondents, those who received services were younger and more educated, more likely to live in the West and less likely to live in the South, more likely to be widowed or separated/divorced and less likely to be currently married, and more likely to be female. This was generally consistent with the previous chapter's findings on the sociodemographic predictors of service use. These shifts were not uniform across racial groups (e.g., Latino service users were actually older than the total Latino sample), and many sociodemographic differences among racial groups remained significant among service users.

Table 3.2 shows that, on the whole, race was not significantly associated with choice of multi-sector treatment profile among service users in bivariate analyses ( $F=1.76$ , n.s.), though this relationship changed when the six-category profile measure was compacted into the four-category measure of therapeutic capacity ( $F=2.4$ ,  $p<.05$ ). Other than race, socioeconomic and demographic characteristics did generally correlate with both the multi-sector profile and therapeutic capacity measures. Use of the most "capable" profiles, those with a capacity to deliver combined pharmacological and psychotherapies, was most common among the college educated but also among the publicly insured, the unemployed, and those out of the workforce altogether. It was also more common among men, 35- to 49-year-olds, Northeasterners, and the never married.

Table 3.3 shows that, overall, these bivariate relationships held steady in the conversion to the therapeutic capacity measure. In turn, Tables 3.4 and 3.5 show that multivariate results were generally consistent with bivariate results. Moreover, with few exceptions,<sup>11</sup> significant individual predictors of the use of the PSY and OMH+GM profiles and of the HS- and CAM-only profiles remained significant predictors of the combined and none therapeutic capacities, respectively.

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<sup>11</sup> Eighteen- to 34-year-olds were less likely than 35- to 49-year-olds to use the psychiatrist profile. The formerly married were more likely than the currently married to use the OMH+GM profile. Those with less than a high school education were more likely than those who had finished high school and women were less likely than men to use the CAM-only profile.

There were few race differences, with blacks less likely than whites to use services capable of delivering pharmacotherapy only (OR .6, .4-.9,  $p<.01$ ) and more likely to use services incapable of delivering either therapeutic modality (OR 2.1, 1.4-3.0,  $p<.001$ ; see also Figure 3.1). Latinos appeared more likely to use services capable of delivering psychotherapy only, but the difference only approached – and did not attain – statistical significance (OR 1.7, .9-2.9,  $p=.076$ ).

The effects of other socioeconomic and demographic characteristics were also generally consistent with bivariate results. Use of service providers with the capacity for delivering combination therapy was positively associated with having a college degree, being male, and living in the Northeast, and negatively associated with being over age 50. Similarly, use of psychotherapeutic services was also negatively associated with being over 50 and positively associated with having a college degree, as well as with being previously married and being under 35. Inversely, use of pharmacotherapeutic services was negatively associated with having attended or completed college, being previously married, and being under 35, but positively associated with being over 50. It was also positively associated with being female and residing in the South. Finally, the exclusive use of service providers without formal training in either therapeutic modality was negatively associated with being publicly insured and being out of the workforce, but positively associated with being under 35.

#### **NEED FOR TREATMENT**

As expected, Tables 3.2 and 3.3 also show that the multi-sector profile and therapeutic capacity measures were significantly associated with the three aspects of evaluated need for treatment. Respondents with current disorders, whether recent or persistent, and those among whom these disorders were comorbid and severe appeared most likely to have seen providers (PSY profile) or combinations thereof (OMH+GM profile) with formal training in the provision of both psycho- and pharmacotherapies. Tables 3.6.a through 3.6.c show these relationships remained strong in multivariate analyses as well.

In terms of persistence, 12-month illness, recent and persistent alike, was positively associated with use of profiles with the capacity for combination therapy (recent: OR 3.0, 1.6-6.0,  $p < .01$ ; persistent: OR 2.7, 1.6-4.6,  $p < .001$ ). Among these individuals, those whose 12-month illnesses were moderate and especially those whose illnesses were severe were more likely to see these most “capable” profiles (moderate: OR 2.4, 1.3-4.4,  $p < .01$ ; severe: OR 4.6, 2.5-8.4,  $p < .001$ ), and severely ill individuals seemed especially unlikely to use profiles capable of providing only one type of therapy (psychotherapy: OR .3, .1-.6,  $p < .001$ ; pharmacotherapy: OR .4, .2-.8,  $p < .01$ ). This was true of respondents whose 12-month illness comprised depression and anxiety as well, as comorbidity was positively associated with use of profiles capable of providing combined pharmaco- and psychotherapies (OR 4.8, 2.4-9.5,  $p < .001$ ) and negatively associated with use of profiles that could provide only one (psychotherapy: OR .2, .3-.8,  $p < .01$ ; pharmacotherapy: OR .5, .2-.9,  $p < .05$ ). Notably, depression only and anxiety only were also significant predictors of use of profiles with the potential to provide combination therapy (depression: OR 1.9, 1.1-3.3,  $p < .05$ ; anxiety: OR 2.2, 1.2-3.8,  $p < .01$ ). Constant across the three sets of analyses, illness in remission was also negatively associated with use of either single-modality profile. Unlike current illness, however, it was positively associated with use of profiles with no recognized therapeutic capacity (OR 2.7, 1.2-5.9,  $p < .05$ ).

## INTERACTIONS

There were no notable race differences in the role of need for treatment in predicting therapeutic capacity. The reduced user-only sample size made interaction term standard errors prohibitively large, but many errors remained fairly large even when I estimated the persistence, severity, and comorbidity models separately for each racial group. As in the aggregate analyses described above, most effects were not statistically significant. The ones that did reach significance were consistent with findings from the total user-only sample.<sup>12</sup>

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<sup>12</sup> This was the case with the influence of socioeconomic characteristics as well. The few significant effects were consistent with findings from the total user-only sample, and non-significant effects trended in the same directions.



## DISCUSSION

### RACE AND OTHER SOCIODEMOGRAPHIC CORRELATES

Findings revealed very few race differences. In fact, while the previous chapter showed them to be less likely than whites to use services in the first place, once Latinos did so, the profiles and therapeutic capacities of their service use appeared quite similar to those of comparable whites. I did, however, find some significant differences between blacks and whites. Blacks were significantly more likely to use the HS-only profile and less likely to use the GM-only profile.

Their relatively great reliance on the HS-only profile is not surprising, given what is known both about blacks' inclination toward seeking religious counsel (e.g., Chatters et al., 2008) and about its negative correlation with seeking healthcare (Neighbors, Musick & Williams, 1998). However, the reluctance to seek healthcare services may have little to do with having first sought religious counsel and may, instead, be a response to prior experiences of discrimination and mistreatment by healthcare professionals (Neal-Barnett & Smith, 1997; LaVeist, Diala & Jarrett, 2000; McLean, Campbell & Cornish, 2003). In fact, this general mistrust of the medical establishment may help explain the finding that blacks were significantly less likely than whites to use the GM-only profile.

Importantly, since they were no less likely to use the other healthcare sector profiles – PSY, OMH+GM, OMH-only – general mistrust of conventional medicine or at least its practitioners is just part of the equation. Most likely, blacks' reluctance to use the GM-only profile in particular is also a function of its therapeutic capacity – it can only provide pharmacotherapy. While studies have repeatedly found that most patients prefer psychotherapy over pharmacotherapy, regardless of race (e.g., van Shaik et al., 2004; Backenstrass et al., 2006; Raue et al., 2009), this preference does appear to be stronger among Latinos and especially blacks (Dwight-Johnson et al., 2000; Cooper et al., 2003). On the question of psychiatric medications, blacks express skepticism about effectiveness and concerns about side effects and addiction potential (Cooper-Patrick et al., 1997; Schnittker, 2003). Moreover, beliefs about psychotropic medications in particular, not misgivings about modern medical practice in general, appear to underlie blacks' reluctance to take them (Schnittker, 2003),

which helps explain why the GM-only was the only healthcare profile they were significantly less likely to use.

Since the previous chapter showed blacks and Latinos to be less likely than comparable whites to use any services at all, however, the scarcity of significant differences with regard to particular treatment profile among users is only part of a bigger picture. In supplemental analyses of both users and non-users, blacks and Latinos were less likely to use all but the HS sector. Using the multi-sector profile measure, blacks were less likely than whites to use all but the HS- and CAM-only profiles, while Latinos were less likely to use all but the OMH-, HS-, and CAM-only profiles.<sup>13</sup> These findings highlight two trends. First, since blacks and Latinos receive services at about half the rate for whites (OR .5, .4-.6,  $p < .001$ , in Tables 2.4.a-c), they receive services from the presumably most extensively trained providers at a similarly low or even lower rate. Second, their service use skews so heavily toward providers with no formal training in the provision of psycho- or pharmacotherapy that, even despite the fact that their rates halve the rate for whites, they are on the whole no less likely to use the HS- and CAM-only profiles. The finding that blacks and Latinos are, overall, less likely to use the CAM sector suggests many whites may use complementary-alternative medicine in conjunction with conventional medicine, rendering them more likely to use the CAM sector but no more likely to use the CAM-only profile.

Notably, this chapter's findings regarding multi-sector profile use among service users were not entirely consistent with Wang et al.'s, especially among Latinos, as I did not replicate any of their significant Latino-white differences. Reasons for this are unclear, but may be a function of differences in the study samples. First, Wang et al.'s sample comprised respondents from the NCS and NCS-R, while Latino respondents in my sample came from the NCS-R and NLAAS. The NLAAS differed from the NCS series in several ways, including in its use of a Spanish-language survey instrument for respondents with limited English language ability. Second, while Wang et al.

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<sup>13</sup> See Tables 3C.1 and 3C.2 in Appendix 3C.

included all NCS series respondents, I excluded respondents with substance use disorders only and, insofar as it was possible, respondents with bipolar spectrum disorders as well.

Aside from race, my findings were generally consistent with Wang et al.'s (2006) findings on profile use and, insofar as comparisons are possible, generally consistent with other studies' findings on the use of individual treatment sectors as well. As such, Wang et al. already provide a comprehensive account of the sociodemographic correlates of profile use (see Wang et al., 2006, 1195-1196). In brief, sex differences in the use of psychiatric and general medical services reflected primary care physicians' willingness to treat women but inclination to refer men to psychiatrists. The positive relationship between education and psychotherapeutic service use is a function of the emphasis on cognitive processes at the heart of most psychotherapies. In turn, older respondents' preference for primary care – and considerable disinclination toward profiles capable of providing psychotherapy – is likely indicative of continued stigmatization and rejection of mental health treatment in this cohort. Finally, psychotherapy appears to be the preferred treatment for relational problems, which may be more common among separated and divorced respondents and for which pharmacotherapy with psychotropic medications is unlikely to be effective.

#### **NEED FOR TREATMENT**

In terms of evaluated need for treatment, respondents with greater levels of need were indeed more likely to use profiles capable of delivering the combination therapies best suited to help them. Whether part of a long-standing problem or only a recent development, current illness spurred respondents to seek services from providers or combinations of providers with formal training in the provision of both psycho- and pharmacotherapies. Furthermore, among those with current – or 12-month – illnesses, respondents whose conditions were severe or comprised comorbid depression and anxiety were even more likely than others to have sought care from these presumably extensively trained professionals.

Again, this is only part of a bigger picture, as many of the individuals using even these most “capable” profiles were not afflicted with severe or comorbid illnesses. In fact, of respondents using

either of the two profiles capable of delivering combined therapies, a third had no current illness (34.5%, SE 3.8), and more than half of these had no known history of mental illness whatsoever (55.2%, SE 3.1; results not shown). This underscores the need to improve allocation of scarce resources, especially since previous studies have found that large numbers of individuals with even the most serious conditions do not seek concurrent services. Among Latinos, blacks, and whites in the CPES, 40.7% (SE 2.9) of respondents with severe 12-month depression or anxiety disorders and 38.2% (SE 2.8%) of respondents with comorbid 12-month depression and anxiety disorders reported no concurrent service use.

Finally, it appears there may be no race differences in the impact of evaluated need for treatment. This may be a matter of small sample size, but even if one assumes it is not, it raises important issues. In general, although Latino, black, and white service users might all be equally likely to seek services in the most capable profiles, Latinos and blacks are only about half as likely to seek services at all, suggesting disproportionately large numbers of these groups' mentally ill members are going untreated altogether. In fact, supplemental analyses of both users and non-users showed race was significantly associated with service therapeutic capacity among respondents with persistent illness, as well as respondents whose 12-month illness was severe or comprised comorbid depression and anxiety. Blacks' and Latinos' use of services potentially capable of providing combination therapy was consistently lower than whites', and their rates of non-use – in other words, their rates of untreated persistent, severe, and comorbid illness – were consistently higher.<sup>14</sup>

## **CONCLUSION**

### **LIMITATIONS**

Results should be interpreted with six limitations in mind.

First, CPES methodology suffers several threats to validity. Detailed in the previous chapter and other service use studies based on these data (e.g., Wang et al., 2005, 2006; Uebelacker et al., 2006), these threats include the fact that sampling excluded homeless and institutionalized persons,

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<sup>14</sup> See Table 3C.3 in Appendix 3C.

the possibility that systematic nonresponse and non-reporting underestimated unmet treatment need, and the possibility that self-reported service use overestimated administrative treatment records. The incomprehensive nature of the core questionnaire's diagnostic assessment and differences in diagnostic coverage across the three component surveys also posed threats to validity. For example, results cannot be generalized to respondents with specific phobia, the most prevalent of the anxiety disorders.

Second, even more than in the preceding chapter, my analyses of race differences in the effects of need for treatment ran the risk of type 2 error. Although cell sizes were prohibitive with regard to conventional interaction analyses, even some of the separate Latino, black, and white models had large standard errors and may have missed important interactive effects.<sup>15</sup>

Third, it is unknown to what degree respondents' ultimate treatment profiles were a function of consumer choice, the availability and accessibility of services, or other unidentified factors. Most likely, it is a complex amalgamation of factors, upon which these analyses shed little light. Since policy efforts at closing the few existing race gaps in profile use would require an improved understanding of these dynamics, the inability to clarify them is a considerable limitation of these analyses.

Fourth, as Wang et al. (2006) also point out, seeking services in profiles capable of providing pharmaco- and/or psychotherapies by no means always results in receiving these therapies. Many respondents make no more than a single visit. Even among respondents in active treatment, many do not receive care that meets the aforementioned standards for minimal adequacy (e.g., Wang, Berglund & Kessler, 2000; Wells et al., 2001; Wang, Demler & Kessler, 2002; Wang et al., 2005; Alegria et al., 2008). This might be even more of an issue for combined therapies, as care must meet minimal adequacy standards for both pharmaco- and psychotherapies during the same 12-month period.

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<sup>15</sup> See Table 3A.2 in Appendix 3A for cell sizes for multi-sector profiles and therapeutic capacities, socioeconomic and demographic characteristics, and need for treatment among service users, by race.

Fifth, in the OMH+GM profile, it is unknown whether treatment by the different providers was consecutive or concurrent, so that even the relatively few respondents who may have received both psycho- and pharmacotherapies may not have received them concurrently. This would be problematic, because it is the simultaneous, not successive, psycho- and pharmacotherapies that studies have found to be especially effective in generating positive treatment outcomes (e.g., Pampallona et al., 2004; Hollon et al., 2005; de Maat et al., 2007; Cuijpers et al., 2009).

Finally, there are two related problems with treatment in the PSY profile. First, the aforementioned unknown timing of particular therapies could be a problem in the PSY profile as well, as a psychiatrist may, for example, provide pharmacotherapy only after unsuccessful attempts at psychotherapy. Perhaps more importantly, treatment by psychiatrists may coincide with treatment by non-psychiatrist MH specialists and/or non-psychiatrist physicians, and it may be the non-psychiatrist providers who actually deliver the therapies. In their focus on the profiles' *potential* to render different therapies, the analyses presented in this chapter fail to address some important issues in the *reality* of mental healthcare.

#### **DIRECTIONS FOR FUTURE RESEARCH**

Several of these limitations suggest directions for further research.

For example, future research would do well to determine the relative influence of consumer choice, availability and accessibility of various services and providers, and the like. A situation in which blacks consult clergy because doing so is consistent with their preference for informal help or fervent faith in God would require different policy interventions than a situation in which they do so because there are no mental health specialists in the area in which they live or because they do not have health insurance.

These last several limitations readily lends themselves to further research to determine the proportions of respondents who actually received the therapeutic modalities for which the providers in their multi-sector service profiles have been trained. As mentioned above, previous studies have found that only a fraction of all mental health treatment actually meets minimal adequacy standards,

and it may be that there are race differences in the likelihood of receiving any adequate treatment or receiving adequate pharmacologic, psycho-, or combination therapies. I take up this issue in the next chapter.

Table 3.1. Socioeconomic and demographic characteristics among all respondents receiving any services, by race<sup>a</sup>

Variable	Attribute	All respondents			Adjusted F <sup>b</sup>	Respondents receiving services			Adjusted F <sup>b</sup>
		Latino (n=2872)	Black (n=4639)	White (n=3212)		Latino (n=347)	Black (n=415)	White (n=737)	
<i>Education (in years)</i>	0-11	44.1 (1.8)	22.3 (1.2)	12.4 (1.2)	<b>74.67***</b>	35.7 (3.0)	21.3 (2.2)	12.9 (1.8)	<b>12.30***</b>
	12	26.4 (1.1)	37.5 (1.1)	31.5 (1.5)		26.8 (3.3)	32.4 (3.1)	27.7 (2.8)	
	13-15	19.1 (1.2)	24.3 (.8)	28.7 (1.1)		22.4 (3.2)	26.8 (2.8)	28.8 (1.8)	
	16+	10.4 (.9)	15.8 (1.1)	27.4 (1.4)		15.1 (1.8)	19.5 (2.7)	30.5 (2.6)	
<i>Work status</i>	Employed	63.6 (1.7)	66.8 (1.2)	63.9 (1.1)	<b>5.90***</b>	52.8 (3.7)	58.3 (3.4)	64.4 (2.8)	<b>5.16***</b>
	Unemployed	7.8 (.9)	8.7 (.7)	5.3 (.7)		7.2 (2.2)	10.2 (1.9)	3.7 (.6)	
<i>Insurance coverage<sup>c</sup></i>	Out of WF	28.6 (1.7)	24.5 (1.0)	30.8 (1.0)		40.0 (3.9)	31.6 (3.1)	31.9 (2.8)	
	Uninsured	33.3 (2.1)	17.4 (.8)	8.4 (.7)	<b>150.10***</b>	17.3 (2.6)	17.4 (2.5)	9.4 (1.7)	<b>6.93**</b>
	Private	42.0 (2.3)	58.4 (1.5)	67.8 (1.7)	<b>58.33***</b>	47.3 (3.4)	50.9 (3.1)	62.9 (2.7)	<b>11.85***</b>
	Public	23.7 (1.3)	32.7 (1.2)	28.2 (1.4)	<b>6.62**</b>	36.1 (3.2)	43.6 (3.3)	27.6 (2.2)	<b>10.58***</b>
	Other	15.2 (1.0)	11.2 (.7)	28.4 (1.5)	<b>80.71***</b>	17.8 (3.1)	11.4 (2.0)	23.9 (1.9)	<b>7.07**</b>
	Female	50.1 (1.5)	57.9 (.8)	55.5 (1.4)	<b>5.91**</b>	62.8 (3.4)	67.5 (2.7)	67.1 (2.0)	.81
<i>Sex</i>	18-34	47.7 (1.6)	35.0 (1.3)	24.8 (1.5)	<b>58.54***</b>	38.6 (3.3)	30.1 (2.8)	27.8 (2.6)	2.50 <sup>o</sup>
	35-49	30.3 (1.1)	33.1 (.9)	29.6 (1.3)		34.6 (3.3)	41.9 (3.6)	38.4 (2.0)	
<i>Region</i>	50+	22.1 (1.2)	31.9 (1.2)	45.6 (1.5)		26.8 (3.4)	28.0 (3.1)	33.9 (2.5)	
	Northeast	16.2 (1.3)	18.1 (1.0)	20.5 (3.9)	<b>16.93***</b>	17.8 (2.6)	22.0 (2.0)	21.1 (5.3)	<b>5.07***</b>
	Midwest	9.0 (1.7)	16.2 (1.1)	27.1 (2.5)		10.5 (2.8)	23.3 (3.1)	24.4 (2.7)	
	South	32.3 (4.0)	57.0 (1.8)	34.0 (2.7)		23.6 (5.1)	38.7 (3.2)	31.3 (4.0)	
<i>Marital status</i>	West	16.2 (1.3)	18.1 (1.0)	20.5 (3.9)		48.1 (4.7)	16.0 (2.4)	23.3 (3.2)	
	Currently	63.1 (1.4)	41.9 (1.1)	60.7 (1.4)	<b>29.89***</b>	54.5 (4.4)	36.9 (2.7)	50.0 (2.6)	<b>3.45*</b>
	Formerly	15.1 (1.1)	26.3 (.8)	21.4 (.8)		27.0 (3.8)	29.5 (2.0)	27.7 (1.5)	
	Never	21.8 (1.4)	31.9 (1.2)	17.8 (1.4)		18.5 (2.7)	33.6 (2.9)	22.3 (2.4)	

<sup>a</sup> Weighted data from the Collaborative Psychiatric Epidemiology Surveys (CPES), 2001-2003.<sup>b</sup> The adjusted F is a variant of the second order Rao-Scott adjusted chi-square statistic. Significance is based on the adjusted F and its degrees of freedom.<sup>c</sup> Categories are not mutually exclusive; respondents can report more than one source of coverage. Adjusted F values based on separate analyses of prevalence of each coverage source (including none).<sup>o</sup> p≤.10, \*p≤.05, \*\*p≤.01, \*\*\*p≤.001 (two-tailed tests).



Table 3.2. Multi-sector service profiles used among respondents receiving any services, by race, socioeconomic and demographic characteristics, and treatment need<sup>a</sup>

Variable	Profile						Adj. F <sup>b</sup>
	PSY	OMH+GM	OMH	GM	HS	CAM	
<b><i>Race</i></b>							1.76 <sup>o</sup>
Latino	22.7 (3.4)	7.2 (2.0)	19.6 (3.1)	29.9 (3.9)	13.2 (2.9)	7.6 (2.2)	
Black	30.6 (2.8)	5.3 (1.3)	13.1 (2.1)	28.7 (2.6)	14.2 (2.4)	8.1 (1.7)	
White	26.6 (1.5)	7.8 (1.0)	13.6 (1.4)	37.0 (2.5)	9.3 (1.5)	5.7 (.8)	
<b><i>Education (in years)</i></b>							2.18*
0-11	27.9 (4.3)	6.5 (1.7)	8.2 (2.2)	39.2 (4.1)	8.0 (2.3)	10.2 (3.7)	
12	25.4 (3.2)	5.1 (1.6)	9.9 (2.0)	45.2 (3.7)	11.4 (2.6)	3.0 (.8)	
13-15	24.0 (3.1)	9.4 (1.3)	17.3 (3.0)	33.4 (3.1)	9.7 (2.0)	6.1 (1.7)	
16+	29.3 (2.0)	8.8 (2.1)	18.5 (3.2)	26.7 (3.1)	10.0 (1.8)	6.7 (1.6)	
<b><i>Work status</i></b>							3.58***
Employed	23.0 (1.7)	9.2 (1.3)	15.5 (1.6)	33.0 (2.5)	12.1 (1.5)	7.2 (1.0)	
Unemployed	31.7 (6.1)	7.0 (3.2)	13.4 (4.0)	32.2 (5.9)	8.5 (5.5)	7.3 (3.0)	
Out of WF	32.6 (1.8)	4.6 (.9)	11.7 (2.1)	41.3 (3.0)	6.2 (1.3)	3.6 (.9)	
<b><i>Ins. coverage<sup>c</sup></i></b>							
Uninsured	24.7 (5.7)	9.3 (6.9)	15.0 (3.7)	22.6 (5.9)	14.8 (3.0)	13.6 (3.9)	
Private	22.2 (1.9)	8.3 (1.4)	15.8 (1.4)	37.4 (2.4)	11.0 (1.6)	5.3 (1.0)	1.40
Public	35.6 (3.4)	5.2 (1.2)	7.7 (1.3)	42.0 (3.6)	5.1 (1.6)	4.3 (.8)	4.06*
Other	27.8 (3.7)	7.7 (2.6)	11.3 (2.1)	36.3 (4.1)	9.2 (3.2)	7.6 (2.5)	.91
<b><i>Sex</i></b>							4.51***
Male	32.8 (2.8)	6.1 (1.2)	15.2 (2.2)	27.0 (3.4)	9.2 (1.8)	9.7 (2.5)	
Female	23.4 (1.6)	8.3 (1.1)	13.6 (1.6)	40.1 (2.2)	10.4 (1.5)	4.2 (.7)	
<b><i>Age</i></b>							7.47***
18-34	23.2 (3.2)	10.3 (2.5)	24.3 (3.6)	19.5 (3.0)	15.1 (2.0)	7.7 (1.6)	
35-49	29.2 (2.5)	8.0 (1.2)	13.4 (1.6)	36.2 (3.3)	8.6 (1.9)	4.6 (.8)	
50+	26.3 (3.5)	4.6 (.8)	6.0 (1.3)	49.6 (3.7)	7.2 (1.1)	6.3 (1.6)	
<b><i>Region</i></b>							2.29*
Northeast	33.2 (4.7)	7.5 (1.8)	14.4 (2.3)	31.5 (5.1)	7.3 (1.6)	6.2 (1.9)	
Midwest	21.6 (2.4)	8.7 (2.0)	14.9 (2.2)	36.5 (4.1)	12.6 (3.4)	5.7 (1.0)	
South	27.9 (2.4)	4.1 (1.1)	12.1 (2.5)	44.3 (2.9)	7.6 (1.3)	4.0 (.9)	
West	23.8 (2.8)	11.0 (1.6)	15.8 (2.6)	27.9 (4.4)	12.8 (2.6)	8.7 (1.4)	
<b><i>Marital status</i></b>							2.40*
Currently	25.8 (2.4)	5.7 (1.2)	11.7 (1.2)	40.6 (2.4)	10.2 (1.7)	6.0 (1.2)	
Formerly	22.9 (1.8)	10.5 (2.0)	15.7 (2.2)	37.1 (2.0)	8.7 (1.2)	5.1 (1.0)	
Never	32.5 (3.8)	8.1 (2.1)	17.6 (3.6)	23.4 (3.9)	11.3 (2.6)	7.2 (2.1)	

<sup>a</sup> Weighted data from the Collaborative Psychiatric Epidemiology Surveys (CPES), 2001-2003; n=1499.

<sup>b</sup> The adjusted F is a variant of the second-order Rao-Scott adjusted chi-square statistic. Significance is based on the adjusted F and its degrees of freedom.

<sup>c</sup> Categories are not mutually exclusive; respondents can report more than one source of coverage. Adjusted F values based on separate analyses comparing respondents with each coverage source to uninsured respondents.

<sup>o</sup>p≤.10, \*p≤.05, \*\*p≤.01, \*\*\*p≤.001 (two-tailed tests).

Table 3.2 (continued). Multi-sector service profiles used among respondents receiving any services, by race, socioeconomic and demographic characteristics, and treatment need<sup>a</sup>

Variable	Profile						Adj. F <sup>b</sup>
	PSY	OMH+GM	OMH	GM	HS	CAM	
<b><i>Ill. persistence</i></b>							<b>3.53***</b>
No history	17.6 (3.2)	3.2 (1.9)	22.4 (3.6)	43.7 (4.8)	9.5 (3.1)	3.6 (1.8)	
In remission	24.1 (3.6)	7.0 (2.0)	12.7 (2.6)	28.4 (3.6)	14.9 (2.2)	12.9 (2.5)	
Recent	27.6 (7.6)	13.4 (5.3)	16.1 (5.8)	32.4 (6.3)	6.7 (3.2)	3.8 (2.3)	
Persistent	32.3 (2.0)	9.4 (.9)	10.1 (1.5)	35.0 (1.9)	8.6 (1.2)	4.6 (.8)	
<b><i>Illness severity</i></b>							<b>3.95***</b>
No 12m illness	20.5 (2.3)	4.9 (1.4)	18.0 (2.3)	36.9 (3.4)	11.9 (2.2)	7.8 (1.5)	
Mild	20.2 (4.1)	7.1 (2.0)	14.8 (3.2)	44.0 (4.0)	8.8 (2.0)	5.2 (1.8)	
Moderate	28.1 (3.3)	10.0 (2.6)	9.5 (2.4)	37.6 (3.2)	9.7 (2.3)	5.2 (1.3)	
Severe	43.0 (3.8)	11.8 (2.1)	8.8 (2.0)	25.7 (4.0)	7.0 (1.7)	3.5 (1.2)	
<b><i>Illness type</i></b>							<b>3.70***</b>
No 12m illness	20.5 (2.3)	4.9 (1.4)	18.0 (2.3)	36.9 (3.4)	11.9 (2.2)	7.8 (1.5)	
Depression only	23.6 (4.2)	8.6 (2.7)	15.9 (3.0)	40.2 (6.2)	9.7 (2.3)	2.1 (.9)	
Anxiety only	26.3 (4.7)	9.3 (2.2)	9.9 (2.1)	37.9 (3.8)	8.5 (1.7)	8.0 (1.8)	
Dep.and anx.	43.9 (5.0)	11.5 (1.7)	7.9 (2.3)	27.0 (4.1)	7.1 (1.8)	2.6 (.9)	
<b><i>Multivar. ref.</i></b>	17.6 (3.2)	3.2 (1.9)	22.4 (3.6)	43.7 (4.8)	9.5 (3.1)	3.6 (1.8)	

<sup>a</sup> Weighted data from the Collaborative Psychiatric Epidemiology Surveys (CPES), 2001-2003; n=1499.

<sup>b</sup> The adjusted F is a variant of the second-order Rao-Scott adjusted chi-square statistic. Significance is based on the adjusted F and its degrees of freedom.

<sup>c</sup> Categories are not mutually exclusive; respondents can report more than one source of coverage. Adjusted F values based on separate analyses comparing respondents with each coverage source to uninsured respondents.

<sup>o</sup> p≤.10, \*p≤.05, \*\*p≤.01, \*\*\*p≤.001 (two-tailed tests).

Table 3.3. Therapeutic capacities of multi-sector profiles used among respondents receiving any services, by race, socioeconomic and demographic characteristics, and treatment need<sup>a</sup>

Variable	Therapeutic capacity				Adj. F <sup>b</sup>
	Combin.	Psych. only	Pharm. only	None	
<b><i>Race</i></b>					<b>2.4*</b>
Latino	29.8 (3.0)	19.6 (3.1)	29.9 (3.9)	20.7 (4.1)	
Black	36.0 (3.1)	13.1 (2.1)	28.7 (2.6)	22.3 (2.3)	
White	34.4 (1.6)	13.6 (1.4)	37.0 (2.5)	14.9 (1.9)	
<b><i>Education (in years)</i></b>					<b>2.56*</b>
0-11	34.4 (4.0)	8.2 (2.2)	39.2 (4.1)	18.2 (4.3)	
12	30.4 (2.6)	9.9 (2.0)	45.2 (3.7)	14.5 (2.6)	
13-15	33.5 (3.4)	17.3 (3.0)	33.4 (3.1)	15.8 (2.5)	
16+	38.1 (2.7)	18.5 (3.2)	26.7 (3.1)	16.7 (2.4)	
<b><i>Work status</i></b>					<b>3.74**</b>
Employed	32.2 (1.9)	15.5 (1.6)	33.0 (2.5)	19.3 (2.0)	
Unemployed	38.7 (6.5)	13.4 (4.0)	32.2 (5.9)	15.8 (4.5)	
Out of WF	37.2 (1.8)	11.7 (2.1)	41.3 (3.0)	9.8 (1.7)	
<b><i>Insurance coverage<sup>c</sup></i></b>					
Uninsured	34.0 (5.9)	15.0 (3.7)	22.6 (5.9)	28.5 (4.5)	
Private	30.5 (1.5)	15.8 (1.4)	37.4 (2.4)	16.3 (1.9)	<b>3.36*</b>
Public	40.9 (3.5)	7.7 (1.3)	42.0 (3.6)	9.4 (1.8)	<b>9.06***</b>
Other	35.5 (4.2)	11.3 (2.1)	36.3 (4.1)	16.8 (3.8)	2.35 <sup>o</sup>
<b><i>Sex</i></b>					<b>3.76*</b>
Male	39.0 (2.9)	15.2 (2.2)	27.0 (3.4)	18.9 (3.4)	
Female	31.7 (1.9)	13.6 (1.6)	40.1 (2.2)	14.6 (1.4)	
<b><i>Age</i></b>					<b>9.03***</b>
18-34	33.5 (4.4)	24.3 (3.6)	19.5 (3.0)	22.7 (2.8)	
35-49	37.3 (2.7)	13.4 (1.6)	36.2 (3.3)	13.1 (2.2)	
50+	30.9 (3.7)	6.0 (1.3)	49.6 (3.7)	13.5 (1.9)	
<b><i>Region</i></b>					<b>2.24*</b>
Northeast	40.7 (3.5)	14.4 (2.3)	31.5 (5.1)	13.5 (2.1)	
Midwest	30.3 (2.3)	14.9 (2.2)	36.5 (4.1)	18.4 (3.7)	
South	32.0 (2.3)	12.1 (2.5)	44.3 (2.9)	11.6 (1.7)	
West	34.8 (3.6)	15.8 (2.6)	27.9 (4.4)	21.6 (3.6)	
<b><i>Marital status</i></b>					<b>3.01*</b>
Currently	31.5 (2.1)	11.7 (1.2)	40.6 (2.4)	16.2 (2.3)	
Formerly	33.4 (2.3)	15.7 (2.2)	37.1 (2.0)	13.8 (1.6)	
Never	40.6 (4.0)	17.6 (3.6)	23.4 (3.9)	18.4 (4.1)	

<sup>a</sup> Weighted data from the Collaborative Psychiatric Epidemiology Surveys (CPES), 2001-2003; n=1499.

<sup>b</sup> The adjusted F is a variant of the second-order Rao-Scott adjusted chi-square statistic. Significance is based on the adjusted F and its degrees of freedom.

<sup>c</sup> Categories are not mutually exclusive; respondents can report more than one source of coverage. Adjusted F values based on separate analyses comparing respondents with each coverage source to uninsured respondents.

<sup>o</sup> p≤.10, \*p≤.05, \*\*p≤.01, \*\*\*p≤.001 (two-tailed tests).

Table 3.3 (continued). Therapeutic capacities of multi-sector profiles used among respondents receiving any services, by race, socioeconomic and demographic characteristics, and treatment need<sup>a</sup>

Variable	Therapeutic capacity				Adj. F <sup>b</sup>
	Combin.	Psych. only	Pharm. only	None	
<b><i>Ill. persistence</i></b>					<b>10.41***</b>
No history	20.8 (3.9)	22.4 (3.6)	43.7 (4.8)	13.1 (4.0)	
In remission	31.1 (3.5)	12.7 (2.6)	28.4 (3.6)	27.8 (3.9)	
Recent	40.9 (6.6)	16.1 (5.8)	32.4 (6.3)	10.5 (3.9)	
Persistent	41.7 (2.1)	10.1 (1.5)	35.0 (1.9)	13.2 (3.9)	
<b><i>Illness severity</i></b>					<b>10.39***</b>
No 12m illness	25.4 (2.6)	18.0 (2.3)	36.9 (3.4)	19.7 (3.3)	
Mild	27.3 (3.5)	14.8 (3.2)	44.0 (4.0)	13.9 (3.1)	
Moderate	38.1 (3.3)	9.5 (2.4)	37.6 (3.2)	14.9 (2.6)	
Severe	54.9 (4.2)	8.8 (2.0)	25.7 (4.0)	10.6 (2.1)	
<b><i>Illness type</i></b>					<b>9.13***</b>
No 12m illness	25.4 (2.6)	18.0 (2.3)	36.9 (3.4)	19.7 (3.3)	
Depression only	32.2 (4.3)	15.9 (3.0)	40.2 (6.2)	11.8 (2.5)	
Anxiety only	35.7 (4.1)	9.9 (2.1)	37.9 (3.8)	16.5 (2.6)	
Dep.and anx.	55.3 (5.1)	7.9 (2.3)	27.0 (4.1)	9.7 (2.2)	
<b><i>Multivar. ref.</i></b>	20.8 (3.9)	22.4 (3.6)	43.7 (4.8)	13.1 (4.0)	

<sup>a</sup> Weighted data from the Collaborative Psychiatric Epidemiology Surveys (CPES), 2001-2003; n=1499.

<sup>b</sup> The adjusted F is a variant of the second-order Rao-Scott adjusted chi-square statistic. Significance is based on the adjusted F and its degrees of freedom.

<sup>c</sup> Categories are not mutually exclusive; respondents can report more than one source of coverage. Adjusted F values based on separate analyses comparing respondents with each coverage source to uninsured respondents.

<sup>o</sup>p≤.10, \*p≤.05, \*\*p≤.01, \*\*\*p≤.001 (two-tailed tests).

Table 3.4. Binomial logistic regression predicting effect of race and socioeconomic and demographic characteristics on 12-month use of six multi-sector profiles, among respondents receiving any services<sup>a</sup>

Variable	PSY			OMH+GM			OMH-only			GM-only			HS-only			CAM-only		
	OR	95% CI		OR	95% CI		OR	95% CI		OR	95% CI		OR	95% CI		OR	95% CI	
Intercept	.7	(.4-1.3)		.0***	(.0-.2)		.1***	(.0-.3)		.4**	(.2-.7)		.1***	(.0-.2)		.1***	(.0-.2)	
Race, Latino (ref white)	.8	(.5-1.3)		.8	(.4-1.6)		1.7°	(.9-2.9)		.8	(.5-1.3)		1.4	(.7-2.6)		1.1	(.5-2.3)	
Race, black (ref white)	1.0	(.8-1.4)		.7	(.4-1.4)		1.1	(.6-1.8)		.6**	(.4-.9)		2.0*	(1.2-3.5)		1.8°	(1.0-3.3)	
<i>Socioeconomic characteristics</i>																		
Educ., 0-11 (ref 12)	.9	(.5-1.6)		1.6	(.6-4.0)		.8	(.4-1.6)		.9	(.5-1.3)		.8	(.4-1.6)		4.1*	(1.4-12.0)	
Educ., 13-15 (ref 12)	1.2	(.8-1.8)		1.6	(.8-3.3)		1.6	(.7-3.4)		.7*	(.4-1.0)		.6	(.3-1.2)		1.8	(.8-3.9)	
Educ., 16+ (ref 12)	1.7***	(1.3-2.4)		1.5	(.6-3.8)		2.0*	(1.0-3.9)		.4**	(.3-.6)		.6	(.3-1.2)		2.2°	(.9-5.4)	
Out of WF (ref employed)	1.3	(.9-1.9)		.6°	(.3-1.0)		1.4	(.8-2.4)		1.1	(.7-1.7)		.7	(.4-1.1)		.4*	(.2-.9)	
Insurance, private (ref none)	.7*	(.4-1.0)		1.3	(.5-3.4)		1.2	(.7-2.1)		1.4	(.9-2.2)		1.0	(.6-1.7)		.5	(.3-1.1)	
Insurance, public (ref none)	1.7*	(1.0-2.9)		1.0	(.5-2.0)		.7	(.4-1.2)		1.2	(.6-2.2)		.4*	(.2-1.0)		.5°	(.2-1.1)	
<i>Demographic characteristics</i>																		
Sex, female	.6**	(.4-.9)		1.4	(.7-2.5)		.8	(.5-1.3)		2.1***	(1.4-3.0)		1.3	(.8-2.1)		.4*	(.2-.9)	
Age, 18-34 (ref 35-49)	.6*	(.4-1.0)		1.3	(.6-2.7)		2.2***	(1.4-3.4)		.4***	(.3-.7)		2.1**	(1.2-3.4)		1.6°	(.9-2.6)	
Age, 50+ (ref 35-49)	.7	(.4-1.1)		.6*	(.4-.9)		.4**	(.2-.8)		1.7*	(1.0-2.8)		1.2	(.7-2.1)		1.8	(.8-3.9)	
Region, South (ref NE)	.8	(.5-1.4)		.5	(.2-1.2)		.8	(.4-1.3)		1.9***	(1.3-2.7)		1.0	(.5-1.8)		.6	(.3-1.3)	
Married, formerly (ref currently)	.8	(.6-1.1)		2.0*	(1.1-3.7)		1.7**	(1.2-2.5)		.8*	(.6-1.0)		.9	(.5-1.5)		1.0	(.5-1.8)	

<sup>a</sup> Weighted data from the Collaborative Psychiatric Epidemiology Surveys (CPES), 2001-2003; n=1499.

°p≤.10, \*p≤.05, \*\*p≤.01, \*\*\*p≤.001 (two-tailed tests).

Table 3.5. Binomial logistic regression predicting effect of race and socioeconomic and demographic characteristics on 12-month use of four therapeutic capacities, among respondents receiving any services<sup>a</sup>

Variable	Combined		Psychotherapy		Pharmacotherapy		None	
	PSY, OMH+GM		OMH-only		GM-only		HS-only, CAM-only	
	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI
Intercept	.8	(.5-1.2)	.1***	(.0-.3)	.4**	(.2-.7)	.2***	(.1-.4)
Race, Latino (ref white)	.8	(.5-1.2)	1.7°	(.9-2.9)	.8	(.5-1.3)	1.3	(.7-2.4)
Race, black (ref white)	1.0	(.7-1.3)	1.1	(.6-1.8)	.6**	(.4-.9)	2.1***	(1.4-3.0)
<i>Socioeconomic characteristics</i>								
Educ., 13-15 (ref 12)	1.3	(.9-2.0)	1.6	(.7-3.4)	.7*	(.4-1.0)	.8	(.5-1.5)
Educ., 16+ (ref 12)	1.8***	(1.3-2.5)	2.0*	(1.0-3.9)	.4**	(.3-.6)	.9	(.5-1.6)
Out of WF (ref employed)	1.1	(.8-1.6)	1.4	(.8-2.4)	1.1	(.7-1.7)	.5**	(.3-.9)
Insurance, public (ref none)	1.6°	(1.0-2.7)	.7	(.4-1.2)	1.2	(.6-2.2)	.4**	(.2-.7)
<i>Demographic characteristics</i>								
Sex, female	.7*	(.5-1.0)	.8	(.5-1.3)	2.1***	(1.4-3.0)	.8	(.5-1.3)
Age, 18-34 (ref 35-49)	.8	(.5-1.3)	2.2***	(1.4-3.4)	.4***	(.3-.7)	2.0**	(1.3-3.1)
Age, 50+ (ref 35-49)	.6*	(.4-1.0)	.4**	(.2-.8)	1.7*	(1.0-2.8)	1.4	(.9-2.4)
Region, Midwest (ref NE)	.7**	(.5-.9)					1.5	(.8-2.5)
Region, South (ref NE)	.7°	(.5-1.0)	.8	(.4-1.3)	1.9***	(1.3-2.7)	.8	(.5-1.2)
Married, formerly (ref currently)	1.1	(.8-1.5)	1.7**	(1.2-2.5)	.8*	(.6-1.0)	.9	(.5-1.5)

<sup>a</sup> Weighted data from the Collaborative Psychiatric Epidemiology Surveys (CPES), 2001-2003; n=1499.

°p≤.10, \*p≤.05, \*\*p≤.01, \*\*\*p≤.001 (two-tailed tests).

Table 3.6.a. Binomial logistic regression predicting effect of race, socioeconomic and demographic characteristics, and illness persistence on 12-month use of four therapeutic capacities, among respondents receiving any services<sup>a</sup>

Variable	Combined			Psychotherapy			Pharmacotherapy			None		
	PSY, OMH+GM			OMH-only			GM-only			HS-only, CAM-only		
	OR	95% CI		OR	95% CI		OR	95% CI		OR	95% CI	
Intercept	.4**	(.2-.7)		.2**	(.1-.7)		.5	(.3-1.1)		.1***	(0-.4)	
Race, Latino (ref white)	.8	(.5-1.2)		1.6	(.9-2.7)		.7	(.4-1.2)		1.4	(.8-2.6)	
Race, black (ref white)	1.0	(.7-1.4)		1.0	(.6-1.6)		.6**	(.4-.9)		2.3***	(1.5-3.4)	
<i>Persistence (ref no history)</i>												
In remission	1.7 <sup>o</sup>	(1.0-2.9)		.4**	(.3-.8)		.5**	(.3-.8)		2.7*	(1.2-5.9)	
Recent	3.0**	(1.4-6.0)		.5	(.2-1.4)		.7	(.3-1.3)		.7	(.2-2.5)	
Persistent	2.7***	(1.6-4.6)		.3***	(.2-.6)		.7	(.4-1.1)		1.1	(.8-2.8)	
<i>Socioeconomic characteristics</i>												
Educ., 16+ (ref 12)	1.8***	(1.3-2.5)		2.2*	(1.1-4.4)		.4***	(.3-.6)		.9	(.5-1.6)	
Out of WF (ref employed)	1.1	(.7-1.5)		1.4	(.8-2.4)		1.0	(.7-1.7)		.6*	(.3-.9)	
Insurance, public (ref none)	1.7*	(1.0-2.7)		.7	(.4-1.2)		1.1	(.6-2.1)		.5**	(.3-.8)	
<i>Demographic characteristics</i>												
Sex, female	.7*	(.5-.9)		.8	(.5-1.2)		2.0***	(1.4-3.0)		.8	(.5-1.3)	
Age, 18-34 (ref 35-49)	.8	(.5-1.3)		2.0**	(1.3-3.1)		.4***	(.3-.7)		2.1**	(1.3-3.5)	
Age, 50+ (ref 35-49)	.7	(.5-1.1)		.4**	(.2-.7)		1.7*	(1.0-2.8)		1.3	(.8-2.4)	
Region, Midwest (ref NE)	.7*	(.5-1.0)		.8	(.4-1.3)		1.2	(.8-2.0)		1.6	(.9-2.7)	
Region, South (ref NE)	.7 <sup>o</sup>	(.5-1.0)		.7	(.4-1.2)		1.8**	(1.2-2.7)		.8	(.5-1.4)	
Region, West (ref NE)	.8	(.5-1.0)		.8	(.4-1.5)		1.0	(.6-1.7)		1.6*	(1.0-2.6)	
Married, formerly (ref currently)	1.0	(.7-1.4)		1.8**	(1.2-2.7)		.8 <sup>o</sup>	(.6-1.0)		.9	(.5-1.4)	

<sup>a</sup> Weighted data from the Collaborative Psychiatric Epidemiology Surveys (CPES), 2001-2003; n=1499.

<sup>o</sup>p≤.10, \*p≤.05, \*\*p≤.01, \*\*\*p≤.001 (two-tailed tests).

Table 3.6.b. Binomial logistic regression predicting effect of race, socioeconomic and demographic characteristics, and illness severity on 12-month use of four therapeutic capacities, among respondents receiving any services<sup>a</sup>

Variable	Combined		Psychotherapy		Pharmacotherapy		None	
	PSY, OMH+GM		OMH-only		GM-only		HS-only, CAM-only	
	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI
Intercept	.4**	(.2-.7)	.2**	(.1-.7)	.5°	(.3-1.1)	.1***	(0-.4)
Race, Latino (ref white)	.8	(.5-1.1)	1.6	(.9-2.8)	.7	(.4-1.2)	1.4	(.8-2.6)
Race, black (ref white)	1.0	(.7-1.4)	1.0	(.6-1.6)	.6**	(.4-.9)	2.3***	(1.5-3.4)
<i>Severity (ref no history)</i>								
Moderate	2.4**	(1.3-4.4)	.3**	(.1-.6)	.9	(.5-1.5)	1.2	(.5-3.0)
Severe	4.6**	(2.5-8.4)	.3***	(.1-.6)	.4**	(.2-.8)	.9	(.4-1.9)
[Lifetime disorder]	1.7°	(1.0-2.9)	.4**	(.3-.8)	.5**	(.3-.8)	2.7*	(1.2-5.9)
<i>Socioeconomic characteristics</i>								
Educ., 13-15 (ref 12)	1.4	(.9-2.1)	1.6	(.7-3.5)	.7°	(.4-1.0)	.9	(.5-1.5)
Educ., 16+ (ref 12)	1.9***	(1.3-2.6)	2.1*	(1.0-4.2)	.4***	(.3-.6)	.9	(.5-1.7)
Out of WF (ref employed)	.9	(.7-1.4)	1.5	(.8-2.6)	1.2	(.7-1.9)	.6*	(.3-.9)
Insurance, public (ref none)	1.6°	(1.0-2.7)	.7	(.4-1.3)	1.2	(.6-2.2)	.5**	(.3-.8)
<i>Demographic characteristics</i>								
Sex, female	.7*	(.5-1.0)	.8	(.5-1.2)	1.9***	(1.3-2.8)	.8	(.5-1.3)
Age, 18-34 (ref 35-49)	.8	(.5-1.3)	2.0**	(1.3-3.2)	.4***	(.3-.6)	2.1**	(1.3-3.3)
Age, 50+ (ref 35-49)	.8	(.5-1.2)	.4***	(.2-.6)	1.6°	(1.0-2.6)	1.3	(.7-2.4)
Region, Midwest (ref NE)	.7*	(.5-.9)	.8	(.4-1.3)	1.3	(.8-2.0)	1.6	(.9-2.8)
Region, South (ref NE)	.7*	(.5-.9)	.7	(.4-1.2)	2.0***	(1.3-2.9)	.9	(.5-1.4)
Region, West (ref NE)	.7°	(.5-1.1)	.8	(.4-1.6)	1.1	(.7-1.9)	1.7*	(1.1-2.7)
Married, formerly (ref currently)	.9	(.6-1.4)	1.9**	(1.2-3.0)	.8	(.7-1.1)	.9	(.5-1.5)

<sup>a</sup> Weighted data from the Collaborative Psychiatric Epidemiology Surveys (CPES), 2001-2003; n=1499.

°p≤.10, \*p≤.05, \*\*p≤.01, \*\*\*p≤.001 (two-tailed tests).



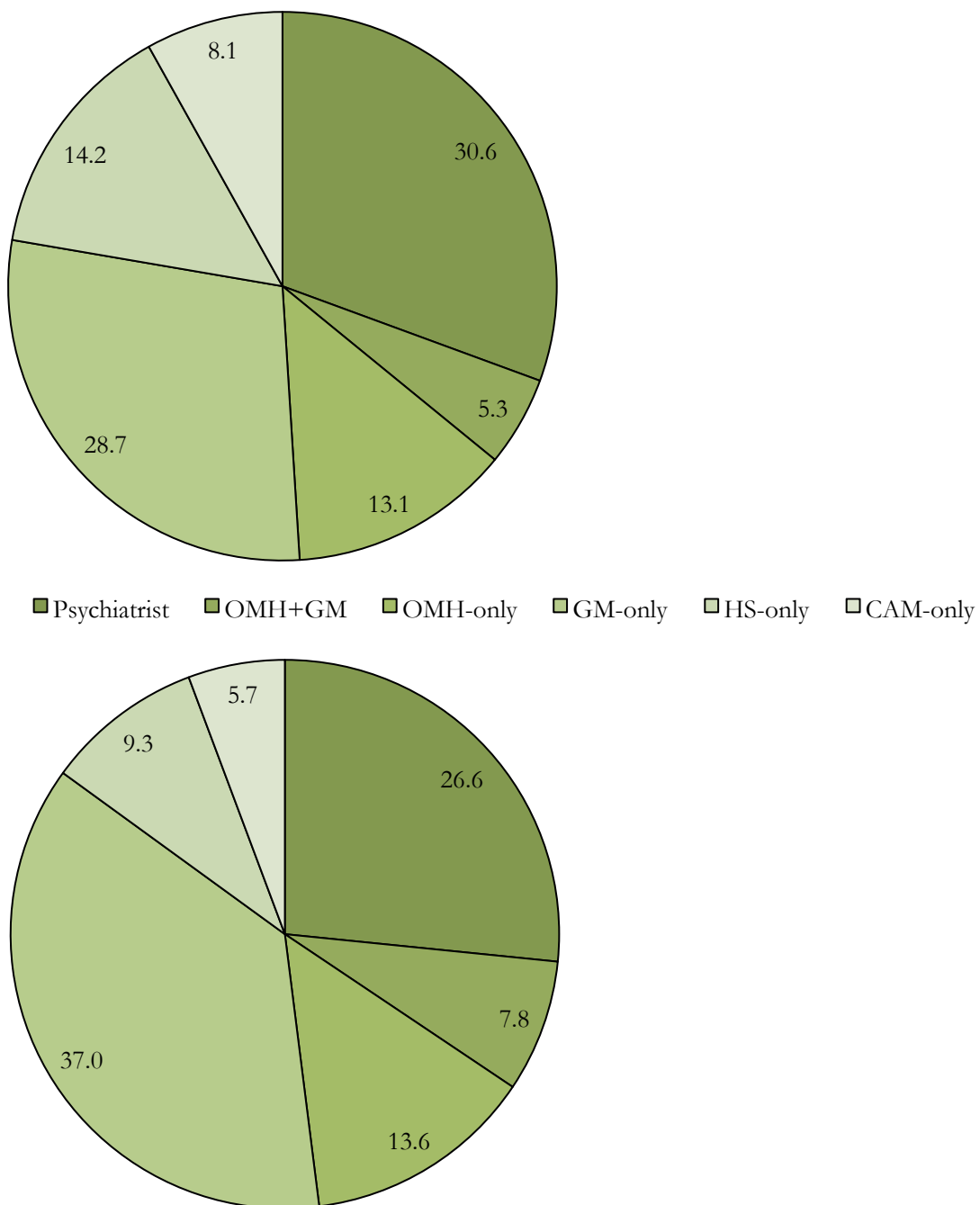
Table 3.6.c. Binomial logistic regression predicting effect of race, socioeconomic and demographic characteristics, and illness comorbidity on 12-month use of four therapeutic capacities, among respondents receiving any services<sup>a</sup>

Variable	Combined			Psychotherapy			Pharmacotherapy			None		
	PSY, OMH+GM			OMH-only			GM-only			HS-only, CAM-only		
	OR	95% CI		OR	95% CI		OR	95% CI		OR	95% CI	
Intercept	.4**	(.2-.7)		.2**	(.1-.6)		.5°	(.3-1.1)		.1***	(.0-.4)	
Race, Latino (ref white)	.9	(.6-1.2)		1.5	(.9-2.6)		.7	(.4-1.2)		1.4	(.8-2.6)	
Race, black (ref white)	1.1	(.8-1.5)		.9	(.5-1.6)		.6**	(.4-.8)		2.2***	(1.5-3.4)	
<i>Comorbidity (ref no history)</i>												
Depression only	1.9*	(1.1-3.3)		.5°	(.3-1.1)		1.0	(.5-1.7)		.9	(.4-2.0)	
Anxiety only	2.2**	(1.2-3.8)		.3***	(.2-.6)		.8	(.4-1.4)		1.4	(.6-3.3)	
Depression and anxiety	4.8***	(2.4-9.5)		.2**	(.1-.6)		.5*	(.2-.9)		.8	(.3-2.2)	
[Lifetime disorder]	1.7°	(1.0-2.9)		.4**	(.3-.8)		.5**	(.3-.8)		2.7*	(1.2-5.9)	
<i>Socioeconomic characteristics</i>												
Educ., 16+ (ref 12)	1.8**	(1.2-2.6)		2.2*	(1.1-4.6)		.4***	(.3-.6)		.9	(.5-1.6)	
Out of WF (ref employed)	1.0	(.7-1.4)		1.4	(.8-2.4)		1.1	(.7-1.8)		.6*	(.4-1.0)	
Insurance, public (ref none)	1.7*	(1.0-2.7)		.7	(.4-1.2)		1.1	(.6-2.1)		.5**	(.3-.8)	
<i>Demographic characteristics</i>												
Sex, female	.7**	(.5-.9)		.8	(.5-1.2)		2.1***	(1.4-3.0)		.8	(.5-1.3)	
Age, 18-34 (ref 35-49)	.8	(.5-1.3)		2.0**	(1.3-3.2)		.4***	(.3-.6)		2.1**	(1.3-3.4)	
Age, 50+ (ref 35-49)	.7	(.5-1.2)		.4***	(.2-.7)		1.7°	(1.0-2.6)		1.3	(.8-2.3)	
Region, Midwest (ref NE)	.7*	(.5-1.0)		.7	(.4-1.3)		1.3	(.8-2.0)		1.6	(.9-2.8)	
Region, South (ref NE)	.7*	(.5-1.0)		.7	(.4-1.2)		1.9***	(1.3-2.8)		.9	(.5-1.4)	
Region, West (ref NE)	.7	(.5-1.1)		.8	(.4-1.5)		1.1	(.6-1.8)		1.7*	(1.1-2.7)	
Married, formerly (ref currently)	1.0	(.7-1.4)		1.8**	(1.2-2.8)		.8	(.6-1.0)		.9	(.5-1.4)	

<sup>a</sup> Weighted data from the Collaborative Psychiatric Epidemiology Surveys (CPES), 2001-2003; n=1499.

°p≤.10, \*p≤.05, \*\*p≤.01, \*\*\*p≤.001 (two-tailed tests).

Figure 3.1. Multi-sector profiles used by blacks (top) and whites (bottom)<sup>a</sup>



<sup>a</sup> Weighted data from the Collaborative Psychiatric Epidemiology Surveys (CPES), 2001-2003.

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## APPENDIX 3A: SAMPLE AND CELL SIZES

Table 3A.1. Dropped cases, by reason and race

Step	Reason	Race					Total
		Latino	Black	White	Asian	Other	
<i>Full CPES sample</i>		3620	6238	7587	2284	284	20013
1	Asian and other				-2284	-284	-2568
2	NSAL white			-891			-891
3	NSAL skip	-5	-152				-157
4	NCS-R part 1	-356	-513	-2516			-3385
5	Bipolar	-54	-236	-267			-557
6	Other disorder	-333	-655	-700			-1688
7	Missing MHT data		-43	-1			-44
<i>Final analytical sample, ch. 2</i>		2872	4639	3213	0	0	10723
8	No MHT	-2525	-4224	-2475			-9224
<i>Final analytical sample, ch. 3</i>		347	415	737	0	0	1499

Table 3A.2. Cell sizes for multi-sector profiles and therapeutic capacities, socioeconomic and demographic characteristics, and need for treatment among respondents receiving any services, by race<sup>a</sup>

Variable	Latino	Black	White
<b><i>Multi-sector profile</i></b>			
PSY	108	135	199
OMH+GM	21	17	62
GM-only	98	110	262
OMH-only	58	57	105
HS-only	40	63	65
CAM-only	22	33	44
<b><i>Therapeutic capacity</i></b>			
Combined therapies	129	152	261
Pharmacotherapy only	98	110	262
Psychotherapy only	58	57	105
None	62	96	109
<b><i>Education (in years)</i></b>			
0-11	128	85	86
12	86	128	188
13-15	81	116	217
16+	52	86	246
<b><i>Work status</i></b>			
Employed	162	238	468
Unemployed	22	42	35
Out of workforce	163	135	233
<b><i>Insurance coverage<sup>b</sup></i></b>			
Uninsured	49	63	68
Private	147	208	477
Public	150	182	193
Other	59	50	164
<b><i>Illness persistence</i></b>			
No lifetime history	88	112	119
Illness in remission	53	76	175
Recent illness	23	18	44
Persistent illness	183	207	399
<b><i>Illness severity</i></b>			
No 12-month illness	141	188	294
Mild	37	56	125
Moderate	57	74	146
Severe	112	97	172
<b><i>Illness comorbidity</i></b>			
No 12-month illness	141	188	294
Depression only	57	69	109
Anxiety only	80	110	170
Depression and anxiety	69	48	164

<sup>a</sup> Unweighted data from the Collaborative Psychiatric Epidemiology Surveys (CPES), 2001-2003; n=1499.

<sup>b</sup> Categories are not mutually exclusive; respondents can report more than one source of coverage.



## APPENDIX B: OUTCOME MEASURES

Table 3B.1. Providers and resources constituting the five sectors of mental health service use

Cluster	Sector		Professional/resource
Healthcare (HC)	Mental health specialty (MHS)	Psychiatry (PSY)	Psychiatrist
		Other mental health specialty (OMH)	Psychologist Social worker in mental health setting (e.g., private practice, psychiatric outpatient clinic, drug or alcohol treatment program) Counselor in mental health setting (e.g., private practice, psychiatric outpatient clinic, drug or alcohol treatment program) Other mental health professional (e.g., psychotherapist) Mental health crisis hotline
	General medical (GM)		General practitioner or family doctor Other medical doctor (e.g., cardiologist, gynecologist, urologist) Nurse, occupational therapist, or other health professional
Non-healthcare (non-HC)	Human services (HS)		Social worker in non-MH setting (e.g., hospital emergency room, social service agency, prison) Counselor in non-MH setting (e.g., hospital emergency room, social service agency, prison) Religious or spiritual advisor (e.g., minister, priest, rabbi)
	Complementary-alternative medicine (CAM)		Other healer (e.g., herbalist, spiritualist, chiropractor, acupuncturist) Self-help group Internet support group

Table 3B.2. Required, allowed, and excluded sectors, by multi-sector profile

Therapeutic capacity	Multi-sector profile	Sector				
		PSY	OMH	GM	HS	CAM
Combined therapies	PSY	Required	Allowed	Allowed	Allowed	Allowed
Psychotherapy	OMH+GM	Excluded	Required	Required	Allowed	Allowed
Pharmacotherapy	OMH-only	Excluded	Required	Excluded	Allowed	Allowed
None	GM-only	Excluded	Excluded	Required	Allowed	Allowed
	HS-only	Excluded	Excluded	Excluded	Required	Allowed
	CAM-only	Excluded	Excluded	Excluded	Excluded	Required

## APPENDIX 3C: SUPPLEMENTAL ANALYSES

Table 3C.1. Binomial logistic regression predicting effect of race and socioeconomic and demographic characteristics on 12-month use of five sectors, among all respondents<sup>a, b</sup>

Variable	PSY			OMH			GM			HS			CAM		
	OR	95% CI		OR	95% CI		OR	95% CI		OR	95% CI		OR	95% CI	
Intercept	1.***	(.0-.1)		.0***	(.0-.1)		.1***	(.0-.1)		.0***	(.0-.0)		.0***	(.0-.0)	
Race, Latino (ref white)	.4***	(.3-.7)		.6*	(.4-.9)		.5***	(.3-.7)		.8	(.5-1.2)		.6*	(.4-1.0)	
Race, black (ref white)	.5***	(.4-.7)		.5***	(.3-.7)		.4***	(.3-.5)		.9	(.6-1.2)		.6**	(.4-.8)	
<i>Socioeconomic characteristics</i>															
Educ., 13-15 (ref 12)	1.2	(.8-1.9)		1.6*	(1.1-2.5)		1.1	(.8-1.5)		1.0	(.6-1.6)		1.6	(.9-3.0)	
Educ., 16+ (ref 12)	1.8**	(1.2-2.7)		2.2***	(1.5-3.2)		1.0	(.7-1.4)		1.4	(.9-2.1)		2.4***	(1.5-3.8)	
Out of WF (ref employed)	1.5	(.9-2.4)		1.6***	(1.1-2.3)		1.2°	(1.0-1.5)		1.0	(.7-1.5)		.9	(.5-1.6)	
Insurance, private (ref none)	.6*	(.4-.9)		.9	(.6-1.2)		1.0	(.8-1.3)		1.0	(.7-1.3)		.6*	(.4-1.0)	
Insurance, public (ref none)	2.0**	(1.3-3.3)		1.2	(.9-1.7)		1.4*	(1.0-2.1)		1.1	(.7-1.7)		1.1	(.7-1.5)	
Insurance, other (ref none)	.7	(.5-1.1)		.8	(.5-1.3)		.8*	(.6-1.0)		1.1	(.7-1.7)		.8	(.4-1.5)	
<i>Demographic characteristics</i>															
Sex, female	1.1	(.8-1.4)		1.5**	(1.1-2.0)		2.3***	(1.9-2.8)		1.9**	(1.2-3.1)		1.2	(.8-1.7)	
Age, 18-34 (ref 35-49)	.5**	(.3-.8)		1.0	(.8-1.3)		.5***	(.4-.7)		1.1	(.8-1.6)		.9	(.6-1.5)	
Age, 50+ (ref 35-49)	.3***	(.2-.6)		.2***	(.1-.3)		.5***	(.3-.7)		.3***	(.2-.6)		.5*	(.3-.9)	
Region, Midwest (ref NE)	.6*	(.4-.9)		.8	(.5-1.2)		1.0	(.6-1.6)		1.5	(.8-2.5)		.8	(.5-1.2)	
Region, South (ref NE)	.7°	(.5-1.1)		.6°	(.4-1.1)		1.1	(.7-1.6)		.9	(.6-1.6)		.6*	(.4-1.0)	
Married, formerly (ref curr.)	1.3	(.9-1.8)		3.0***	(2.2-4.2)		1.5*	(1.1-2.0)		1.9**	(1.2-2.9)		3.0***	(1.7-5.3)	
Married, never (ref curr.)	1.8**	(1.2-2.8)		1.6***	(1.2-2.1)		1.1	(.8-1.5)		1.1	(.8-1.5)		1.4	(.8-2.3)	

<sup>a</sup> Weighted data from the Collaborative Psychiatric Epidemiology Surveys (CPES), 2001-2003; n=10723.<sup>b</sup> Outcome measure reference category is non-use of sector, including no service use and use of services in other sectors.  
°p≤.10, \*p≤.05, \*\*p≤.01, \*\*\*p≤.001 (two-tailed tests).

Table 3C.2. Multinomial logistic regression predicting effect of race and socioeconomic and demographic characteristics on 12-month use of six multi-sector profiles, among all respondents<sup>a,b</sup>

Variable	PSY			OMH+GM			OMH-only			GM-only			HS-only			CAM-only		
	OR	95% CI		OR	95% CI		OR	95% CI		OR	95% CI		OR	95% CI		OR	95% CI	
Intercept	.1***	(.0-.1)		.0***	(.0-.0)		.0***	(.0-.0)		.0***	(.0-.1)		.0***	(.0-.0)		.0***	(.0-.0)	
Race, Latino (ref white)	.4***	(.3-.7)		.4**	(.2-.8)		.8	(.5-1.3)		.5**	(.3-.8)		.7	(.3-1.4)		.4	(.2-1.2)	
Race, black (ref white)	.5***	(.4-.7)		.4**	(.2-.7)		.5*	(.3-.9)		.4***	(.3-.5)		.9	(.5-1.6)		.9	(.5-1.6)	
<i>Socioeconomic characteristics</i>																		
Educ., 0-11 (ref 12)	1.0	(.5-1.9)		1.8	(.7-4.3)		.9	(.4-1.8)		1.0	(.6-1.6)		.9	(.4-1.9)		3.8*	(1.2-12.2)	
Educ., 13-15 (ref 12)	1.2	(.8-2.0)		1.9*	(1.1-3.2)		1.8	(.9-3.9)		.9	(.6-1.3)		.8	(.4-1.6)		2.2*	(1.0-4.5)	
Educ., 16+ (ref 12)	1.8**	(1.2-2.9)		2.3°	(1.0-5.3)		2.7**	(1.4-5.1)		.8	(.5-1.1)		1.1	(.5-2.2)		2.9***	(1.3-6.3)	
Insurance, private (ref none)	.6*	(.4-.9)		1.0	(.4-2.7)		1.0	(.7-1.7)		1.0	(.7-1.5)		.9	(.6-1.4)		.6	(.3-1.1)	
Insurance, public (ref none)	2.0**	(1.3-3.3)		1.2	(.6-2.4)		.9	(.5-1.7)		1.4	(.9-2.2)		.6	(.3-1.3)		.7	(.3-1.4)	
Insurance, other (ref none)	.7	(.5-1.1)		1.2	(.5-3.1)		.9	(.5-1.5)		.7*	(.5-1.0)		1.1	(.5-2.2)		1.3	(.5-3.6)	
<i>Demographic characteristics</i>																		
Sex, female	1.1	(.9-1.5)		2.2**	(1.3-3.8)		1.4	(.9-2.3)		2.5***	(2.0-3.3)		2.1**	(1.3-3.4)		.8	(.4-1.5)	
Age, 18-34 (ref 35-49)	.5**	(.3-.8)		1.2	(.5-2.5)		1.6*	(1.1-2.4)		.4**	(.3-.6)		1.5	(.9-2.5)		1.2	(.7-2.0)	
Age, 50+ (ref 35-49)	.3***	(.2-.5)		2***	(.1-.4)		2***	(.1-.4)		.6*	(.4-1.0)		.5°	(.3-1.1)		.9	(.4-2.1)	
Region, Midwest (ref NE)	.6*	(.4-.9)		.9	(.4-2.0)		.9	(.5-1.6)		1.1	(.6-1.9)		1.5	(.7-3.5)		.8	(.4-1.9)	
Region, South (ref NE)	.7	(.5-1.1)		.4*	(.2-1.0)		.7	(.3-1.3)		1.3	(.8-2.0)		.8	(.4-1.7)		.5*	(.2-1.0)	
Region, West (ref NE)	.8	(.6-1.2)		1.7	(.9-3.1)		1.2	(.6-2.3)		1.2	(.7-2.0)		2.1°	(1.0-4.5)		1.6	(.7-3.5)	
Married, formerly (ref currently)	1.4°	(.9-2.0)		4.4***	(2.1-9.3)		3.8***	(2.4-5.9)		1.3	(.9-1.8)		1.8*	(1.1-3.0)		1.7	(.9-3.3)	
Married, never (ref currently)	1.7**	(1.2-2.6)		1.4	(.7-3.1)		1.3	(.8-2.0)		1.3	(.7-2.1)		1.1	(.6-1.9)		1.3	(.7-2.5)	

<sup>a</sup> Weighted data from the Collaborative Psychiatric Epidemiology Surveys (CPES), 2001-2003; n=10723.

<sup>b</sup> Outcome measure reference category is no service use.

°p≤.10, \*p≤.05, \*\*p≤.01, \*\*\*p≤.001 (two-tailed tests).

Table 3C.3. Twelve-month mental health service use therapeutic capacity among all respondents, respondents with 12-month illness, and respondents for whom it is persistent, severe, and comorbid, by race<sup>a</sup>

Therapeutic capacity	Latino	Black	White	Adj. F <sup>b</sup>
<i>All respondents (n=10723)</i>				
Combination	2.9 (.3)	3.4 (.3)	5.3 (.4)	<b>9.31***</b>
Psychotherapy	1.9 (.4)	1.2 (.2)	2.1 (.3)	
Pharmacotherapy	2.9 (.4)	2.7 (.3)	5.7 (.5)	
None	2.0 (.4)	2.1 (.3)	2.3 (.3)	
No service use	90.2 (.6)	90.6 (.6)	84.5 (.8)	
<i>Respondents with 12m illness (n=2297)</i>				
Combination	13.8 (.20)	14.9 (1.7)	18.5 (1.3)	<b>2.93***</b>
Psychotherapy	5.4 (2.0)	3.0 (.8)	4.6 (.9)	
Pharmacotherapy	10.3 (2.0)	10.4 (1.3)	15.9 (1.2)	
None	4.9 (1.3)	7.6 (1.3)	6.3 (.7)	
No service use	65.6 (2.0)	64.1 (2.2)	55.7 (1.3)	
<i>Respondents whose 12m illness is persistent (n=2116)</i>				
Combination	13.2 (2.1)	15.2 (1.9)	17.7 (1.1)	<b>2.81*</b>
Psychotherapy	4.7 (1.0)	2.8 (.8)	4.2 (.7)	
Pharmacotherapy	9.3 (1.9)	10.3 (1.2)	15.4 (1.1)	
None	5.0 (1.7)	7.3 (1.3)	5.2 (.8)	
No service use	67.8 (2.2)	64.5 (2.2)	57.5 (1.3)	
<i>Respondents whose 12m illness is severe (n=730)</i>				
Combo	26.1 (2.7)	23.9 (2.8)	35.2 (3.8)	<b>5.08***</b>
Psychotherapy	8.9 (2.6)	2.2 (1.1)	4.9 (1.5)	
Pharmacotherapy	6.0 (2.7)	10.1 (2.1)	18.0 (3.3)	
None	3.8 (1.0)	8.3 (1.8)	6.5 (1.7)	
No service use	55.3 (3.8)	55.4 (3.2)	35.3 (3.7)	
<i>Respondents whose 12m illness is comorbid (n=532)</i>				
Combination	28.1 (4.0)	21.0 (3.7)	36.3 (4.4)	<b>4.45***</b>
Psychotherapy	1.3 (.3)	4.0 (.7)	5.5 (1.7)	
Pharmacotherapy	10.6 (3.4)	12.6 (4.1)	18.0 (3.1)	
None	3.2 (1.6)	5.2 (3.5)	6.5 (1.4)	
No service use	56.9 (2.7)	57.1 (3.8)	33.7 (3.2)	

<sup>a</sup> Weighted data from the Collaborative Psychiatric Epidemiology Surveys (CPES), 2001-2003.

<sup>b</sup> The adjusted F is a variant of the second-order Rao-Scott adjusted chi-square statistic. Significance is based on the adjusted F and its degrees of freedom.

<sup>°</sup>p≤.10, \*p≤.05, \*\*p≤.01, \*\*\*p≤.001 (two-tailed tests).

**Chapter 4: Race and the quality of care for depression and anxiety disorders: Impact of race differences in sites of care and the mis-medication of minorities**

**ABSTRACT**

**OBJECTIVES:** This study examines Latino- and black-white differences in the adequacy of the mental health services received in a 12-month period by individuals with depression and anxiety disorders.

**DATA:** The study uses data from the Collaborative Psychiatric Epidemiology Surveys (CPES) project, a representative survey of mental health and mental health service use among American adults. The analytic sample includes Latino (n=206), non-Latino black (n=227), and non-Latino white (n=443) respondents with 12-month depression and anxiety disorders and concurrent service use.

**METHODS:** Adequate psychotherapy consisted of eight or more visits with psychiatrist or other MH specialist lasting at least 30 minutes; adequate pharmacotherapy consisted of four or more visits with psychiatrist or other physician plus use of a suitable prescription medication for at least 60 days.

**RESULTS:** There were no Latino-white differences in the likelihood of receiving adequate therapy. Blacks were less likely than whites to receive adequate psycho- or pharmacotherapeutic services. Among prescription medication users, both blacks and Latinos were more likely than whites to have been prescribed medications other than those recommended for their particular disorders.

**CONCLUSIONS:** Less than half of the depressed and anxious individuals who use MH services receive care consistent with evidence-based guidelines, and these deficits are most pronounced among blacks. The prescribing of medications appears to be the site of the greatest race disparity in the adequacy of mental healthcare.

## INTRODUCTION

Mental health service use has increased steadily in recent decades (Robins & Regier, 1991; Kessler et al., 1999, 2004b). Yet, services research continues to point to significant gaps between the prevalence of mental disorders and concurrent treatment for them. For example, around 40% of those with depression and 60% of those with anxiety still do not seek care (Wang et al., 2005). This research, including the analyses presented in chapter 2, also finds that treatment gaps are even greater among blacks and Latinos, who tend to be underrepresented in most mental health treatment settings (e.g., Ruiz, 2002; Cabassa, Zayas & Hansen, 2006; Cook, McGuire & Miranda, 2007).<sup>1</sup> Furthermore, these differences persist even in analyses that control for the effects of sociodemographic characteristics and both evaluated and perceived need (e.g., Padgett et al., 1994b; Alegria et al., 2002; Dobalian & Rivers, 2008; Zuvekas & Fleishman, 2008).

More recently, using detailed data collected in various nationwide community surveys, services research has gone beyond crude yes/no indicators of service use to assess the quality of those services. They have used evidence-based guidelines to establish minimal adequacy standards for psycho- and pharmacotherapies and found that, in addition to the many respondents with mental disorders who go untreated altogether, much of the treatment respondents do receive does not meet even these barebones standards (e.g., Wells et al., 1994; Katz et al., 1998; Wang et al., 2005). In this sense, studies using the yes/no indicator understate the magnitude of the underuse of mental health services by individuals with mental health problems.

Since blacks and Latinos are significantly less likely than whites to receive any care for mental health problems, adequacy studies have expectedly often found them less likely to receive adequate care as well (e.g., Sclar et al., 1999; DHHS, 2001; Wang, Berglund & Kessler, 2000; Cabassa, Zayas & Hansen, 2006). While the results of studies restricted to respondents reporting at least some service use have been less consistent, even some of these have found Latinos and blacks less likely than whites to receive care that is consistent with evidence-based guidelines (e.g., Fortney et al., 1999;

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<sup>1</sup> Inpatient settings are a notable exception, especially for blacks (Snowden & Cheung, 1990; Padgett et al., 1994a; Snowden, 1999; Takeuchi & Cheung, 1998; Chow, Jaffee & Snowden, 2003).

Wang, Demler & Kessler, 2002; Alegria et al., 2008). This could be in part because, as previous studies have also found, Latino and especially black service users are more likely to consult providers without any formal training in the provision of psycho- or pharmacotherapies, such as clergy (Peifer, Hu & Vega, 2000; Neighbors, Musick & Williams, 1998; Chatters et al., 2008). However, to date, few studies have examined race differences in rates of adequate care *within* particular treatment sectors (e.g., Wang, Berglund & Kessler, 2000). This study is intended to fill that gap.

In addition, as discussed in the preceding chapter, Wang et al. (2006) recently reconceived the customary yes/no indicators for different service sectors to create a single six-category measure of multi-sector service profile. They defined profiles according to their capacity to provide psychotherapy (i.e., eight or more sessions with a mental health professional, lasting at least 30 minutes) and pharmacotherapy (i.e., four or more visits to a physician, along with at least 60 days of an appropriate prescription medication), so that profiles that could potentially provide combination psycho- and pharmacotherapies were presumably the most “capable,” while profiles that could provide neither were the least. Accordingly, in the preceding chapter, I combined the most capable and least capable profiles to create a four-category measure of service therapeutic capacity. Since Wang et al.’s (2006) service profile measure is rather new – and my service therapeutic capacity measure even newer – no study has examined race differences in the degree to which profiles actually deliver the therapies of which they are capable. This study is intended to fill that gap as well.

Since, by definition, treatment can only be “adequate” in the presence of a treatable condition, I restrict my analyses to participants in the Collaborative Psychiatric Epidemiology Surveys (CPES) with 12-month depression/anxiety and concurrent service use (n=876). I address four aims. First, since Wang et al. (2006) obtained only crude estimates of the proportion of users who received what they called active treatment, I use more intricate indicators of treatment adequacy (e.g., eight or more 30-minute sessions with MH professional for psychotherapy) to determine the degree to which providers within various profiles deliver the therapies for which they have been trained in a fashion that is consistent with established guidelines. Second, I determine whether this degree varies by race

(e.g., whether Latinos are less likely than whites to receive adequate psychotherapy in the OMH-only profile). Third, I take a step back to determine whether blacks' tendency to use profiles with no recognized therapeutic capacity impacts their overall chances of receiving adequate therapies. Fourth, mindful of what is known about Latinos' and especially blacks' preferences with regard to psychiatric medications and problems with misdiagnosis and prescription of outdated medications, I divide adequate pharmacotherapy into its component parts – doctor visits and prescription drug use – and examine race differences in the delivery of these two aspects of pharmacotherapeutic care.

## **LITERATURE REVIEW**

### **MINIMALLY ADEQUATE TREATMENT**

Although they are guided by evidence-based treatment guidelines, specific operational definitions of adequacy depend on the data under analysis, and previous studies have varied somewhat on their definitions of adequate care. I outline the minimal adequacy standards generally used in studies of NCS and, more recently, CPES data below, but review findings from studies using a wider range of definitions of adequacy.

Based on the fact that even time-limited therapies for depression and anxiety generally require at least eight sessions (American Psychiatric Association, 1998, 2000, 2006), psychotherapy must consist of at least eight counseling sessions lasting on average at least 30 minutes. Studies diverge on the providers deemed capable of rendering psychotherapy, including either only mental health specialists (e.g., Wang, Demler & Kessler, 2002; Alegria et al., 2008) or all healthcare and human services providers (e.g., Wang et al., 2005, 2007; Neighbors et al., 2007). Like Wang et al. (2006), I restrict psychotherapy to professionals with formal training in the provision of this modality, including psychiatrists and other mental health specialists (e.g., psychologists, psychotherapists).

In turn, based on findings that the acute and continuation phases of depression and anxiety treatment generally require four or more visits for medication evaluation, initiation, and monitoring (APA, 1998, 2000, 2006), pharmacotherapy must consist of at least four visits with a psychiatrist or



non-psychiatrist physician along with use of an appropriate prescription medication. Studies differ on the requisite term for medication use, which is usually at least 30 (e.g., Wang et al., 2007) or 60 days (e.g., Wang et al., 2005; Neighbors et al., 2007). I use the more rigorous 60-day medication term. Appropriate psychotropics consistently include antidepressants for depression, and antidepressant and anxiolytic agents for anxiety disorders.<sup>2</sup>

### **TREATMENT SHORTFALLS**

As mentioned above, studies have consistently found that much of the mental health treatment rendered in the U.S. does not meet minimal adequacy standards (e.g., Wells et al., 1994; Katz et al., 1998; Wang, Berglund & Kessler, 2000; Wang, Demler & Kessler, 2002; Wang et al., 2005). Studies show no more than 40% of service users receive evidence-concordant care (Wang, Demler & Kessler, 2002), and some peg this figure at closer to 30% (Wang et al., 2005) or even 20% (Wang et al., 2007). Discrepancies are likely a function of differences in data sources (e.g., NCS vs. NCS-R), samples (e.g., all cases vs. serious cases only), and operational definitions (e.g., 30 vs. 60 days of medication), but these studies generally paint a grim picture of the mental healthcare landscape. Considering that only a fraction of individuals with recent disorders seeks concurrent care, its poor quality suggests only around 15% of them receive care consistent with evidence-based standards (Wang, Demler & Kessler, 2002; Wang et al., 2005).<sup>3</sup>

This problem is especially pronounced in the general medical (GM) sector, where studies estimate 80-85% of users receive inadequate care (Young et al., 2001; Wang, Demler & Kessler, 2002; Wang et al., 2005). In addition, though my analyses restrict psychotherapy to mental health specialty (MHS) providers, even studies that cast a wider net of eligible professionals find that the human services (HS) sector provides only marginally higher rates of adequate care than the GM sector (Wang et al., 2005). MHS providers, psychiatrist and non-psychiatrist alike, appear uniquely adept at rendering adequate care, providing competent care to 50% of all cases (Wang et al., 2005) and 80%

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<sup>2</sup> See Table 4B.1 in Appendix 4B for outline of criteria for adequate therapies, along with providers and profiles capable of delivering them.

<sup>3</sup> Calculations based on NCS-R data from Wang et al. (2005) suggest the figures are 14.3% for anxiety disorders and 21.6% for mood disorders (including bipolar).

of serious cases (Wang, Demler & Kessler, 2002). This is not surprising, since MHS treatment is associated not only with more counseling sessions (Pingitore et al., 2001; Wang et al., 2005) but also with better adherence to pharmacological treatment (Stein et al., 2006).

### THE ROLE OF RACE

While the exact figures may shift from one study to another, this relationship between sector and relative adequacy – in other words, the tendency for specialists to outperform generalists and human service providers – certainly seems indisputable. As explained in the preceding chapter, however, the relationship between race of patient and sector used is somewhat more complex. Likely largely due to differences in data sources (e.g., clinical records vs. community surveys), sample selection criteria (e.g., all respondents regardless of “caseness” vs. depressed cases), and types of comparisons (e.g., between-race comparisons of specialist use vs. within-race comparisons of specialist/generalist use), findings have generally been equivocal. That Latinos and especially blacks place a premium on counsel from clergy and other spiritual advisors is clear, but support for other common assumptions – that minorities are less likely to turn to mental health specialists and more likely to seek help in primary care – is more dubious. Possible reasons for the inconsistent findings are discussed in the previous chapter, but the point is that blacks and Latinos may be at increased risk *neither* of receiving the poor-quality care generally rendered in GM settings *nor* of foregoing the high-quality care generally restricted to MHS settings.

However, there is some evidence that blacks and Latinos may be less likely than whites to receive adequate care even when they seek similar care from similar providers. For example, one study found that, among individuals treated in the MHS sector, blacks were significantly less likely than whites to receive evidence-concordant care (Wang, Berglund & Kessler, 2000). In another, among respondents receiving any psychotherapy, Latinos were less likely than whites to receive an adequate course of treatment (Harman, Edlund & Fortney, 2004).<sup>4</sup> A study of ethnic matching found

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<sup>4</sup> Blacks were no less likely to receive adequate psychotherapy, however, and there were no race differences in the likelihood of receiving adequate pharmacotherapy or of receiving any adequate therapy (when psycho- and pharmacotherapies were combined) (Harman, Edlund & Fortney, 2004).

blacks and Latinos remained in treatment longer when they saw a therapist of the same ethnicity (Sue et al., 1991), which, considering the dearth in minority providers (Holzer, Goldsmith & Ciarlo, 1998; Manderscheid & Henderson, 1998), could also lead to inappropriately curtailed treatment. More recently, a study of visits to office-based psychiatrists found they were significantly shorter among blacks than whites and, importantly, lay on opposite sides of the 30-minute average required for adequate psychotherapy (Olfson, Cherry & Lewis-Fernández, 2009). When these data were disaggregated into 2001-2003 and 2004-2006, however, there were no significant differences in the latter period. This is consistent with findings from a study of 10-year trends in treatment, which showed race disparities in psychiatric care had largely been eliminated between 1995 and 2005 (Stockdale et al., 2008).

The problem is that much mental healthcare takes place in primary care settings. For a number of reasons, the GM sector that has played by far the biggest role in the aforementioned steady rise in rates of mental health treatment (Kessler et al., 2005b; Olfson et al., 2002; Uebelacker et al., 2006; Kessler, Merikangas & Wang, 2007). Though the preceding chapter revealed that previous studies have been equivocal on the question of whether blacks and Latinos are overrepresented in primary care settings, there is some evidence they may be more likely to receive inadequate care than similar whites in similar settings. For example, one study found that, among individuals treated in the GM sector, blacks were significantly less likely to receive adequate care (Wang, Berglund & Kessler, 2000), and the aforementioned 10-year trend study showed Latino- and black-white disparities in primary care remained largely unchanged between 1995 and 2005 (Stockdale et al., 2008).

This is in part because primary care providers (PCPs) tend toward pharmacotherapy, a modality predicated upon accurate diagnosis. This is problematic, because studies have shown linguistic bias in the psychiatric evaluation of Latinos (Malgady, Rogler & Costantino, 1987) and a tendency toward misdiagnosis of Latinos and blacks with bipolar spectrum disorders as schizophrenic (Mukherjee et al., 1983). Misdiagnosis and missed diagnoses have also been shown to be problems among blacks with depression and anxiety disorders (Neal-Barnett & Smith, 1997; Baker

& Bell, 1999; Borowsky et al., 2000). Furthermore, some studies have shown that, even when they are treated for the same condition, blacks are often given older medications with reduced effectiveness and increased side effects (Melfi et al., 2000; Kuno & Rothbard, 2002; Herbeck et al., 2004; Mallinger et al., 2006). Importantly, even this finding is not steadfast, as others have found no significant differences in the adequacy of medication management (Harman, Edlund & Fortney, 2004; Joo et al., 2005).

### **MULTI-SECTOR TREATMENT PROFILES (REVISITING AN INNOVATIVE MEASURE)**

The analyses in the preceding chapter were based on Wang et al.'s (2006) innovative measure of treatment setting. Most studies had previously focused on five sectors – psychiatry (PSY), other mental health specialty (OMH),<sup>5</sup> general medical (GM), human services (HS), and complementary-alternative medicine (CAM) – acknowledging that individuals could seek services in more than one. However, Wang et al. (2006) moved beyond studying individual sector use and created a measure of six mutually exclusive profiles of care potentially involving multiple sectors. The PSY profile consisted of any use of the PSY sector (used by 31.7% of analytic sample, SE 2.1); OMH+GM – use of both the OMH and GM sectors without use of the PSY sector (9.9%, SE 1.1); OMH-only – use of the OMH sector without the PSY or GM sector (10.8%, SE 1.7); GM-only – use of the GM sector without the PSY or OMH sector (34.7%, SE 2.0); HS-only – use of the HS sector without the PSY, OMH, or GM sector (8.4%, SE 1.0); CAM-only – use of the CAM sector without any other sector (4.5%, SE .7).

Wang et al. (2006) defined these profiles in terms of their capacity for delivering psycho-, pharmaco-, and combination therapies, but left open the question of how often the profiles delivered the therapies for which the providers within them had been trained. As mentioned above, my analyses begin with an effort to answer this question. In accordance with previous studies, I expect to find that considerable numbers of respondents did not receive the evidence-based therapies their profiles could have provided and that this problem was more pronounced in the OMH+GM and

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<sup>5</sup> Some studies combined the PSY and OMH sectors into a larger mental health specialty (MHS) sector.

GM-only profiles.

Since my focus is on race, I then take up the question of whether there are race differences in the degree to which respondents receive the therapies their service profiles are potentially capable of delivering. As previous studies have largely been equivocal regarding the role of race in predicting adequate care among individuals seeking similar care from similar providers, I expect to find few race differences in these analyses. Considering problems with misdiagnosis and mis-medication, which are especially prominent in pharmacotherapy provided in GM settings, I expect blacks and Latinos under pharmacotherapeutic care to be most susceptible to under-treatment vis-à-vis comparable whites. If found, race differences in the adequacy of care provided within particular profiles would point to possible differences in experience with providers or therapies, as well as possible differences in access to and choice about continued care by certain providers or within certain therapeutic approaches.

Moreover, since the previous chapter revealed some black-white differences in the profiles respondents consulted in the first place, I also analyze the adequacy of care among respondents using *any* of the six profiles to determine whether possible race differences in treatment adequacy are a function of race differences in the choice of treatment profile. Since there were no significant Latino-white differences regarding profiles in which care was sought, differences in the adequacy of care provided are unlikely. However, because the previous chapter found blacks more likely to use profiles without the capacity to provide any recognized mental health treatment modality, I expect treatment adequacy to be generally lower among blacks than among whites. If found, these differences would confirm speculation that, whether they are a function of consumer choice or unequal access, black-white differences in treatment profile disadvantage blacks by providing them with less adequate care.

## **HYPOTHESES**

To sum up, I evaluate four hypotheses. First, I expect to find that, for many respondents who receive care in multi-sector profiles capable of providing psycho- and/or pharmacotherapy, the care they receive does not actually meet evidence-based guidelines for minimal adequacy. I expect

this to be more of a problem in the GM-only profile and, by extension, in the OMH+GM profile, where GM providers are responsible for pharmacotherapeutic care. Second, I expect few race differences in the degree to which profiles capable of providing psycho- and/or pharmacotherapy actually provide evidence-concordant therapeutic care. If differences do emerge, however, I expect them to disadvantage black and Latino respondents. In other words, blacks and Latinos will be less likely than whites to receive adequate care. Third, when my analyses incorporate users of the HS- and CAM-only profiles, defined as unable to deliver any adequate care, I expect blacks to have lower overall adequacy of care. Finally, when evidence-concordant pharmacotherapy is divided into its component parts – doctor visits and medication – I expect to find significant race differences in the likelihood of receiving an adequate course of pharmacological treatment. In other words, I expect Latinos and especially blacks to be more likely to report medication use that does not meet minimal adequacy standards.

## **DATA, VARIABLES, AND METHODS**

### **DATA**

As in previous chapters, analyses used data from the Collaborative Psychiatric Epidemiology Surveys (CPES) project, which comprised the National Comorbidity Survey Replication (NCS-R), National Latino and Asian American Study (NLAAS), and National Survey of American Life (NSAL). The NLAAS oversampled Latino (and Asian) Americans, and the NSAL – African-American and Caribbean blacks. As described in chapter 2 and elsewhere (Heeringa et al., 2004), all three used a multi-stage area probability sampling design. All three also included non-institutionalized adults aged 18 years and older residing in U.S. households. However, while NCS-R and NSAL sampled only English-speaking residents of the coterminous U.S., NLAAS included speakers of Spanish and several Asian languages and Hawaii residents.

The CPES used both a core questionnaire and web-based cross-linked documentation. The core questionnaire was the Composite International Diagnostic Interview (CIDI), a standardized psychiatric diagnostic instrument designed for administration by lay interviewers (Kessler & Üstün,

2004). Clinical reinterviews have found generally good concordance between CIDI diagnoses and independent clinical evaluations (Haro et al., 2006). In the NCS-R, the core diagnostic assessment in part 1 was administered to all 9282 respondents, but additional sections in part 2 were administered to just 5692 of these respondents, oversampling individuals with clinically significant psychopathology (see Kessler et al., 2004a, 72). All NLAAS and NSAL respondents received both parts 1 and 2.<sup>6</sup> Primarily using the computer-assisted personal interview (CAPI) method, data collection took place between 2001 and 2003.

As in previous chapters, cases from the full sample (n=20013) were dropped in a series of steps. Steps 1 through 8 duplicate steps in chapter 3, but step 9 restricts the previous sample of 1499 service users to those with 12-month depression and anxiety disorders, the two most prevalent forms of mental disorder among American adults. Steps are summarized below, along with number of cases dropped and percentage in parentheses.<sup>7</sup>

**Step 1.** 2284 Asian and 284 other respondents were dropped.

**Step 2.** 891 (11.7) NSAL whites who skipped the services section were dropped.

**Step 3.** 5 (.1) Latino and 152 (2.4) black NSAL respondents who could not commit to complete the survey were dropped.

**Step 4.** 356 Latino (9.8), 513 (8.2) black, and 2516 (33.2) white respondents in NCS-R part 1 were dropped.

**Step 5.** 54 (1.5) Latino, 236 (3.8) black, and 267 (3.5) white respondents with any history of bipolar disorder were dropped.<sup>8,9</sup>

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<sup>6</sup> Exceptions are NSAL whites (see step 2) and other NSAL respondents screened out by the commitment probe (see step 3).

<sup>7</sup> See Table 4A.1 in Appendix A for summary of reason and number and percentage of cases dropped in each step.

<sup>8</sup> Since bipolar spectrum disorders tend to be particularly severe (e.g., Kessler et al., 2005a), these respondents were dropped regardless of comorbidity with dysthymic depression or anxiety, in order to avoid biasing results.

<sup>9</sup> The low prevalence of bipolar spectrum disorders among Latinos is likely due to the fact that the NLAAS did not assess these disorders, so that a number of Latino respondents who may have actually had bipolar disorder were instead classified as having major depression. Complex-design-adjusted analyses of the NCS-R and NSAL, both of which did assess bipolar spectrum disorders, found a 5% (SE .9%) lifetime prevalence of bipolar disorder among Latinos, with a rate of 4.1% among both blacks (SE .4%) and whites (SE .2%). The difference was not statistically significant.

**Step 6.** 333 (9.2) Latino, 655 (10.5) black, and 700 (9.2) white respondents with a history of any other assessed disorder but no history of major or dysthymic depression, panic disorder, agoraphobia, social phobia, generalized anxiety disorder (GAD), or posttraumatic stress disorder (PTSD) were dropped.<sup>10</sup>

**Step 7.** One white and 43 (.7) black respondents without valid service use data were dropped.

**Step 8.** 2525 (69.8) Latino, 4224 (67.7) black, and 2475 (32.6) white respondents with no 12-month MH service use were dropped.

**Step 9.** 141 (40.6) Latino, 188 (45.3) black, and 294 (39.9) white respondents with no 12-month depression or anxiety disorders were dropped.

The final analytic sample consisted of 876 respondents – 206 (5.7%) Latinos, 227 (3.6%) non-Latino blacks, and 443 (5.8%) non-Latino whites.

## VARIABLES

### *DEPENDENT VARIABLES*

The CIDI included an extensive section on mental health services, which asked respondents about services they had used in the preceding 12 months. Questions assessed the type of provider seen and the number and average duration of visits. Additionally, a section on pharmaco-epidemiology assessed the use of prescription medications, including the name and duration of each medication taken, over the same 12-month period immediately preceding the interview.

### **Adequate treatment**

As described above, *adequate psychotherapy* was defined as eight or more sessions lasting on average 30 or more minutes within the 12 months prior to interview. Following Wang et al. (2006), psychiatrist and non-psychiatrist mental health specialists were considered to be the only providers capable of rendering psychotherapy. Psychotherapy could thus be provided only in the

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<sup>10</sup> Other disorders included substance use (assessed in all three surveys), intermittent explosive disorder (NCS-R, NLAAS), oppositional-defiant, conduct, separation anxiety, and adult separation anxiety disorders (NCS-R, NSAL), and specific phobia (NCS-R). Unlike bipolar cases, who were dropped regardless of depression/anxiety history, respondents with these other disorders were dropped only if they had no history of depression and/or the anxiety disorders included in my analyses.



PSY, OMH+GM, and OMH-only profiles. *Adequate pharmacotherapy* was defined as four or more visits to a psychiatrist or non-psychiatrist physician, along with 60 or more days of an appropriate medication, also within the 12 months prior to interview. For depression, the only appropriate medication was an antidepressant, while anxiety disorders could be treated with either an antidepressant or anxiolytic agent.<sup>11</sup> Pharmacotherapy could only be provided in the PSY, OMH+GM, and GM-only profiles. *Adequate combination therapy* consisted of adequate psychotherapy combined with adequate pharmacotherapy, and could only be provided in the PSY and OMH+GM profiles. Finally, any adequate therapy could be provided in any of the aforementioned profiles (i.e., PSY, OMH+GM, GM-only, OMH-only).

I used these definitions to create four indicators for adequate psychotherapy, pharmacotherapy, combination therapy, and any therapy. The reference group was always inadequate therapy or no therapy (e.g., adequate psychotherapy with inadequate or no psychotherapy as the reference group).

### **Potentially adequate treatment**

To account for respondents who had begun treatment shortly before the time of interview and had not yet met the above criteria even if they were in the early stages of adequate care, adequacy studies often conduct sensitivity analyses using a broader definition of minimally adequate treatment (e.g., Wang et al., 2005). This broad definition is intended to detect respondents whose treatment started too recently to have met the full criteria for adequacy by the time of the interview. Such potentially adequate treatment consists of making two or more visits in the 12-month period prior to interview or being in ongoing treatment at the time of the interview. I used these guidelines to create four additional indicators for potentially adequate psychotherapy, pharmacotherapy, combination therapy, and any therapy.

Potentially adequate psychotherapy consisted of making at least two visits to a psychiatrist or other mental health specialist or being in ongoing treatment with one of these providers at the time

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<sup>11</sup> See Table 4B.2 in Appendix 4B for a complete list of antidepressant and anxiolytic medications.

of the interview. Potentially adequate pharmacotherapy consisted of making at least two visits to a psychiatrist or other physician or being in ongoing treatment with one of these providers at the time of the interview. Potentially adequate combination therapy consisted of at least potentially adequate psychotherapy along with at least potentially adequate pharmacotherapy (e.g., *adequate* psychotherapy accompanied by *potentially* adequate pharmacotherapy would constitute only *potentially* adequate combination therapy, despite the definite adequacy of its psychotherapeutic component).

### **Doctor visits and medication**

Since an adequate number of doctor visits and adequate medication use may not always go hand in hand, I created separate indicators for adequate doctor visits, consisting of four or more visits with a physician, and adequate medication, consisting of 60 or more days of an appropriate prescription drug. Mindful of aforementioned findings about tendencies to misdiagnose and mis-medicate Latinos and especially blacks, I also created two measures of medication adequacy for use only among respondents reporting at least some use of prescription medications. One was an indicator of inadequate medication, with adequate medication as the reference category. The other was a more fine-tuned measure, coded into inappropriate medication, appropriate medication for less than 60 days, and appropriate medication for 60 days or more (reference group).

### ***INDEPENDENT VARIABLES***

The key predictor *race* was coded into Latino, non-Latino black, and non-Latino white (reference group).

As per Wang et al. (2006), multi-sector treatment *profile* was coded into PSY (reference group), OMH+GM, OMH-only, GM-only, HS-only, and CAM-only. Since the HS- and CAM-only profiles were, by definition, incapable of providing any adequate therapy, only the PSY, OMH+GM, and OMH- and GM-only profile indicators were included in analyses of profile performance. While

some analyses included users of the HS- and CAM-only profiles, these did not include profile of care as a predictor of adequacy.<sup>12</sup>

### CONTROL VARIABLES

Additionally, all analyses controlled for sociodemographic characteristics, including education, work status, and insurance coverage, as well as sex, age, region of residence, and marital status.

*Education* was based on years of schooling and coded into 0 to 11 years, 12 years (reference group), 13 to 15 years, and 16 years or more. *Work status* was coded as employed (reference group), unemployed, or out of the workforce. Finally, as a proxy for access to care, *insurance coverage* was coded as private, public, other, or uninsured (reference group). Private insurance included coverage provided by a current or past employer or union, either directly to the respondent or to a family member. Public insurance included Medicare, Medicaid, and military insurance. Other insurance included plans purchased directly from insurance companies on the individual market and supplemental insurance such as Medigap. Respondents could report multiple sources of insurance.

*Sex* was an indicator for females, with males as the reference group. *Age* was recoded into three categories for respondents aged 18-34, 35-49 (reference group), and 50 and over. *Region of residence* included Northeast (reference group), Midwest, South, and West. Finally, *marital status* consisted of currently married (reference group), formerly married (i.e., divorced, separated, or widowed), and never married.

### METHODS

All analyses accounted for complex design, adjusting for differential probabilities of selection, nonresponse, and poststratification (for more on CPES weighting, see Heeringa & Berglund, 2004). Population-weighted estimates and standard errors were obtained using the Taylor series linearization method implemented in SPSS (SPSS Inc., 2009). Bivariate relationships were evaluated using the Rao-Scott chi-square test of association, which generated corresponding design-

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<sup>12</sup> The perfect negative correlation between HS- and CAM-only profile use and treatment adequacy would have created a quasi-complete separation in the data and singular design-based covariance matrix.

based F statistics. Multivariate analyses consisted of complex-design-adjusted logistic regressions, with t-tests for all parameters.

Table 4.1 compares the distributions of socioeconomic and demographic characteristics across racial groups among respondents with 12-month depression and anxiety disorders and among the subset of these respondents who reported receiving any mental health services within the same 12-month period.

Two related sets of analyses examined the degree to which respondents received the evidence-based therapies their multi-sector profiles were deemed qualified to deliver. First, for each profile, Table 4.2 reports the percentages of service users who received the therapies the profile was capable of providing (aim 1). Second, for each type of therapy, Table 4.3 reports the percentage of service users who received evidence-concordant care in any of the profiles capable of providing it (aim 1).

Table 4.4 compares across racial groups the percentages of service users who received adequate therapies, among respondents using any of the profiles capable of providing them (aim 2) and among respondents using any services (aim 3).

For each therapy, Table 4.5 presents results of binomial logistic regression (BLR) using race, multi-sector profile, and sociodemographic controls to predict the likelihood of receiving evidence-concordant care among respondents using profiles with a recognized *capacity* to provide it (aims 1 and 2). Table 4.6 presents results of BLR using race and sociodemographic controls to predict the likelihood of receiving evidence-concordant care among respondents using *any* services (aim 3).

The BLR presented in Table 4.7 uses race and sociodemographics to predict the likelihood of receiving an adequate number of doctor visits and receiving an adequate course of prescription medication treatment (aim 4). Finally, Table 4.8 presents the results of two sets of analyses, both of which include only respondents reporting at least some prescription medication use and treat adequate medication use (i.e., 60 or more days of an appropriate medication) as the dependent reference category. First, BLR uses race and sociodemographics to predict the likelihood of receiving

any inadequate medication; second, multinomial logistic regression (MLR) uses race and sociodemographics to predict the likelihood of receiving specifically an inappropriate medication or an appropriate medication but for less than 60 days (aim 4).

## RESULTS

### PROFILE PERFORMANCE AND ADEQUACY OF CARE

Table 4.2 shows that there were significant numbers of respondents with depression and anxiety disorders who used profiles capable of delivering different therapies but did not receive care that met even minimal standards for the adequate provision of those therapies. Rates of adequate treatment generally were highest in the psychiatry (PSY) profile, which outperformed the other profiles in the provision of satisfactory care (see also Figure 4.1).

Similarities in rates of adequate psychotherapy in the PSY, OMH+GM, and OMH-only profiles suggest psychiatrist and non-psychiatrist mental health specialists provided evidence-concordant psychotherapeutic care at roughly equivalent rates. On the other hand, non-psychiatrist physicians lagged far behind psychiatrists in the provision of adequate pharmacotherapy, which was at least partly responsible for the low rates of combination therapy in the OMH+GM profile. Gaps narrowed under the broader definition of adequate treatment, which showed great increases in the numbers of respondents receiving treatment that could potentially turn out to be adequate. Multivariate assessment of the statistical significance of these differences is presented in Table 4.5.

Exploring the question of adequacy in another way, Table 4.3 shows that many of the respondents using any of the profiles capable of providing adequate psychotherapy, pharmacotherapy, and combination therapy did not receive them. The problem was especially pronounced for combination therapy, though rates of adequate pharmacotherapy were quite low as well. Overall, more than half of respondents using profiles capable of delivering a variety of therapies received care that did not actually meet minimal adequacy standards for *any* therapy. Expectedly, all rates rose dramatically with the broadening of the definition of adequacy.

## **RACE, PROFILE PERFORMANCE, AND THE ADEQUACY OF CARE**

Table 4.4 compares across racial groups the percentages of respondents receiving each therapy, among users of any profile with a recognized capacity to deliver it and among users of any profile. Rates of adequate care were roughly similar for Latinos and whites across all eight comparisons, but blacks' rates tended to lag by at least 9 percentage points.<sup>13</sup> For example, among users of the PSY, OMH+GM, and OMH-only profiles, 24.4% (SE 3.7) of blacks compared to 41.4% (SE 4.4) of whites received adequate psychotherapeutic care. Among users of the presumably most capable PSY and OMH+GM profiles, 12.3% (SE 2.5) of blacks compared to 27.7% (SE 6.7) of Latinos received adequate combination therapy. Among all service users, only about one-third of whites and Latinos received some sort of adequate care; among blacks, it was less than one-fifth.

In part because the Rao-Scott is a general test of association, however, few of the relationships between race and adequacy were statistically significant. In fact, only the relationship between race and the receipt of any adequate therapy was significant, both among users of profiles capable of providing at least one adequate therapy and among all users. Nevertheless, all bivariate relationships trended in the same direction; blacks were consistently less likely than whites and Latinos to receive adequate care. Multivariate assessment of these differences is presented in Tables 4.5 and 4.6.

For each type of therapy, Table 4.5 presents the effects of race, multi-sector profile, and sociodemographic controls on the likelihood of receiving evidence-concordant care among respondents using any of the multi-sector profiles that could have provided it. Like the bivariate analyses in Table 4.4, regression analyses showed that Latinos were no less likely than whites to receive the evidence-based care their multi-sector profiles were deemed capable of delivering. This was not the case for blacks, however. Blacks' lower likelihood of receiving adequate psychotherapy and adequate pharmacotherapy approached significance (OR .6, .3-1.1,  $p < .10$  for both), and they were significantly less likely than whites to receive any evidence-concordant therapy (OR .5, .3-.9,

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<sup>13</sup> The exception was combination therapy, which was relatively uncommon across all racial groups, especially among users of all profiles

$p < .05$ ). Notably, black-white differences were no longer statistically significant when the definition of adequacy was broadened to encompass making at least 2 visits to a qualified professional or being in treatment at time of interview.

In Table 4.5, BLR results on the role of specific profiles were also consistent with findings in Table 4.2. There were no significant differences in the likelihood of providing satisfactory psychotherapy. However, the PSY profile was far superior to the GM-only profile in the provision of pharmacotherapy, and to the OMH+GM profile in the provision of pharmaco- and combination therapies. There were no differences in the likelihood of providing any adequate therapy between the PSY and OMH+GM profiles, but the PSY profile outperformed the GM- and OMH-only profiles on this measure as well.

The broadened definition of adequacy found the OMH+GM and OMH-only profiles significantly less likely to provide potentially adequate psychotherapy. The OMH+GM and GM-only profiles, however, were no longer less likely than the PSY profile to render potentially adequate pharmacotherapy.<sup>14</sup> Differences in the provision of potentially adequate combination therapy and any therapy remained largely unchanged.

While – restricted to users of capable profiles – the analyses in Table 4.5 revealed few race differences in the adequacy of care, Table 4.6 shows differences did emerge in analyses that also included users of the HS- and CAM-only profiles, which were by definition considered to be unable to provide any adequate care. Among users of all profiles, blacks were about half as likely as whites to receive psychotherapy (OR .5, .3-1.0,  $p < .05$ ), pharmacotherapy (OR .5, .3-.9,  $p < .05$ ), or any therapy (OR .5, .3-.8,  $p < .05$ ) that met minimal adequacy standards. As in the bivariate analyses described above, there were no significant differences with regard to the likelihood of receiving adequate combination therapy, which was generally rare among all racial groups. Broadening the definition of adequacy eliminated all but the black-white difference in the adequacy of pharmacotherapy (OR .6, .3-1.0,  $p < .05$ ).

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<sup>14</sup> The difference between the PSY and GM-only profiles was just barely above the .05 cutoff ( $p = .052$ ).

## RACE AND THE USE OF PSYCHIATRIC MEDICATIONS

Since Table 4.3 showed the broader definition of adequacy to subsume around 70% of pharmacotherapeutic care, the persistence of the black-white difference in *potentially* adequate pharmacotherapy likely resulted in part from blacks' reluctance to seek care from GM providers at all.<sup>15</sup> However, Table 4.7 shows the black-white difference in *actually* adequate pharmacotherapy also appeared to lie in large part in great disparities in the use of prescription drugs. While adequate pharmacotherapy consists of two elements, blacks were no less likely than whites to make the requisite four or more visits to a physician, even despite their disinclination toward consulting GM providers. There were, however, significant race differences with regard to medication, as Latinos were about half as likely as whites to receive an adequate course of pharmacological treatment (OR .5, .3-.9,  $p<.05$ ) and blacks were only one third (.3, .2-.4,  $p<.001$ ) as likely to do so.

This is in part because Latinos and especially blacks were less likely to use any psychiatric medication at all, though the Latino-white difference was not statistically significant.<sup>16</sup> However, Table 4.8 shows that, even in analyses restricted to medication users, both blacks (OR 2.4, 1.5-3.8,  $p<.01$ ) and Latinos (OR 1.8, 1.1-3.1,  $p<.05$ ) were more likely than whites to report inadequate medication use. In turn, in analyses that differentiated between receiving an inappropriate medication and receiving an appropriate medication but for less than 60 days, both Latinos (OR 2.0, 1.0-3.9,  $p<.05$ ) and especially blacks (OR 3.2, 1.6-6.4,  $p<.001$ ) were significantly more likely than whites to receive an inappropriate medication. Blacks were also nearly significantly more likely (OR 2.0, 1.0-4.0,  $p=.052$ ) than whites to receive an appropriate medication but for less than the required 60 days.

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<sup>15</sup> The previous chapter showed blacks were less likely than whites to use the GM-only profile (OR .6, .4-.9,  $p<.01$ ; Table 3.3), and supplemental analyses showed they were also significantly less likely to see GM providers regardless of profile (OR .6, .4-.9,  $p<.05$ ; results not shown).

<sup>16</sup> Among service users, blacks were only one-third as likely as whites to report any medication use (OR .3, .2-.4,  $p<.001$ ). Latinos were about two-thirds as likely as whites to do so, but the difference was not statistically significant (OR .7, .4-1.1,  $p=.094$ ; results not shown).



## DISCUSSION

### PSYCHOTHERAPY

While psychiatrist and non-psychiatrist MH specialists provide adequate psychotherapy at similar rates, the PSY profile was much more likely to provide services that met the expanded criteria for potentially adequate care. Supplemental analyses showed this was due to a number of factors. Though there were no significant differences in the sheer number of visits, visits to psychiatrists tended to be shorter than visits to non-psychiatrist MH specialists in the OMH+GM and OMH-only profiles.<sup>17</sup> Respondents in the PSY profile also had higher rates of ongoing treatment than their OMH+GM and OMH-only profile counterparts. Importantly, about half of the respondents treated by psychiatrists in the PSY profile were also treated by one or more non-psychiatrist specialists, and ongoing treatment was more common among both groups than among non-psychiatrist specialists in the OMH+GM and OMH-only profiles.<sup>18</sup> Therefore, by removing the 30-minute requirement and including respondents in ongoing treatment, the broader definition significantly elevated rates of potentially adequate treatment in the PSY profile vis-à-vis the OMH+GM and OMH-only profiles.

### PHARMACOTHERAPY

Consistent with previous studies, my analyses showed that GM providers delivered low rates of adequate care. The OMH+GM and GM-only profiles, in which non-psychiatrist physicians were solely responsible for respondents' pharmacotherapy, lagged far behind the PSY profile in the provision of pharmacotherapy and combination therapy. Although previous studies have found adherence to pharmacological treatment increased with concurrent psychotherapy (Harman, Edlund & Fortney, 2004; Pampallona et al., 2004; Alegria et al., 2007), this did not account for differences

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<sup>17</sup> Among respondents treated by psychiatrists in the PSY profile, 26.3% (SE 3.9) reported average durations below the 30-minute requirement for adequate care. The corresponding figure for respondents treated by non-psychiatrist specialists in the OMH+GM and OMH-only profiles was 10.5% (SE 2.7). See Table 4C.1 in Appendix 4C.

<sup>18</sup> In the PSY profile, 69.9% (SE 4.6) of respondents reported ongoing treatment by psychiatrists and 69.5% (SE 4.1) reported ongoing treatment by other MH specialists, compared to 48.6% (SE 4.0) of respondents reporting ongoing treatment by MH specialists outside of the PSY profile. See Table 4C.1 in Appendix 4C.

between the PSY and OMH+GM profiles, and supplemental analyses showed controlling for the presence of psychotherapy did little to temper differences between the PSY and GM-only profiles.<sup>19</sup>

OMH+GM and GM-only profile treatment seemed particularly responsive to the broadening of the definition of adequacy, however. Supplemental analyses revealed the difference lay in the number of doctor visits, as respondents treated by psychiatrists reported four or more visits far more often than those treated by non-psychiatrist physicians in the OMH+GM and GM-only profiles.<sup>20</sup> Despite some evidence of higher antidepressant treatment adequacy among psychiatrists than PCPs (Weilburg et al., 2003), differences in the prescribing of psychiatric medications were not significant.<sup>21</sup> The discrepancy could be due to differences in data source, definition of adequate treatment, and included disorders.

#### **RACE AND THE ADEQUACY OF CARE**

Among users of profiles capable of delivering at least one type of evidence-based therapy, blacks were only half as likely as whites to receive any therapy that met minimal adequacy standards. This was consistent with previous studies' findings that, even when they entered treatment, blacks were more likely to have fewer and shorter sessions (O'Sullivan et al., 1989; Hu et al., 1991; Sue, Zane & Young, 1994; Olfson, Cherry & Lewis-Fernández, 2009) and to receive inappropriate or outdated medications (Melfi et al., 2000; Herbeck et al., 2004). It also points to potential problems with racial equality in the provision of adequate care.

Differences were greater in analyses that included all service users, regardless of multi-sector profiles. In these analyses, blacks were only half as likely as whites to receive satisfactory psychotherapy or pharmacotherapy. Though gaps would likely have been greater still if not for the fact that

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<sup>19</sup> In analyses including an indicator for psychotherapy, the odds ratio of receiving adequate pharmacotherapy in GM-only profile was .3 (.1-.5,  $p < .001$ ; Table 4.5), compared to a corresponding odds ratio of .2 (.1-.4,  $p < .001$ ; results not shown) in analyses that did not include the psychotherapy indicator.

<sup>20</sup> Among respondents treated by psychiatrists in the PSY profile, 57.2% (SE 7.6) reported making 4+ visits, compared to only 20.7% (SE 2.9) of respondents treated by non-psychiatrist physicians in the OMH+GM and GM-only profiles ( $F=10.93$ ,  $p < .001$ ). Notably, 42.9% (SE 3.0) of respondents treated by psychiatrists in the PSY profile were also treated by non-psychiatrist physicians, but there were no significant differences in the number of visits between non-psychiatrist MDs in the PSY and in the OMH+GM and GM-only profiles. See Table 4C.2.a.

<sup>21</sup> See Table 4C.2.b in Appendix 4C.

blacks rarely received care in the often inferior GM settings, these findings showed they were nevertheless significantly disadvantaged by their tendency to use profiles with no recognized capacity for delivering evidence-based care.

The existence of statistically significant differences among users of all profiles points to the fact that much of the overall black-white disparity in adequacy was a function of differences in the profiles in which respondents sought care in the first place. However, nearly-significant differences in analyses restricted to respondents using particular profiles suggests this overall black-white disparity was also, in part, a function of differences in the care respondents received even in similar treatment settings.

## **MEDICATION**

While there were notable black-white differences in the likelihood of receiving adequate therapies, Latino-white differences appeared neither among users of capable profiles nor among all users. The only such disparity emerged in analyses of treatment with prescription medications, which found Latinos – and blacks – considerably less likely to have received an adequate course of pharmacological treatment.<sup>22</sup> The black-white difference persisted even under the broadened definition of pharmacotherapeutic adequacy. This is in part because whites were much more likely to take psychoactive medications in the first place.<sup>23</sup> In fact, this was consistent with previous studies, which have found Latinos and especially blacks to be more skeptical about psychiatric medications than whites and to report greater reluctance to take them (Cooper-Patrick et al., 1997; Dwight-Johnson et al., 2000; Cooper et al., 2003; Schnittker, 2003). Presumably, this also means blacks and Latinos are unlikely to make the sort of direct requests for psychiatric medication that most often lead to

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<sup>22</sup> Since Latinos are significantly less likely to receive any medication and, among medication users, more likely to receive medication that is inadequate, one might expect their rates of adequate pharmacotherapy to be lower than whites'. However, this is not the case. What likely accounts for this is the fact that, among respondents reporting four or more doctor visits, only about one in four does not have concurrent 60+ days of an appropriate medication (27.8%, SE 3.2; results not shown). Among respondents with 60+ days of medication, however, more than one in two do not have concurrent four or more doctor visits (53.2%, SE 3.2; results not shown). It may be that many white medication users are not seeing doctors or not seeing them enough to meet established standards for minimal pharmacotherapeutic adequacy.

<sup>23</sup> Supplemental analyses on respondents without 12-month disorders found that, even after controlling for lifetime disorders, whites significantly more likely than blacks to take any psychiatric medication and significantly more likely than blacks and Latinos to take it for 60 days or more (results not shown).

prescriptions for them (Kravitz et al., 2005), and this likely contributes to the white-nonwhite gap in the use of these medications.

However, Latino- and especially black-white disparities in the adequacy of medication use persisted even in analyses restricted to medication users only, pointing to pharmacological treatment as the site of the most dramatic racial disparities in treatment adequacy. Previous research suggests this could be due to a number of factors. For example, the tendency to misdiagnose blacks as schizophrenic or otherwise psychotic (Mukherjee et al., 1983; Flaserud & Hu, 1992; Baker & Bell, 1999) likely leads to the prescription of inappropriate medications. While findings on schizophrenic misdiagnosis of Latinos have been more equivocal (Mukherjee et al., 1983; Flaserud & Hu, 1992), diagnostic assessment of Latinos presents its own set of challenges, as bilingual subjects are evaluated differently when interviewed in English and in Spanish (Del Castillo, 1970; Price & Cuellar, 1981; Malgady & Costantino, 1998). Additionally, studies have found adherence to pharmacological treatment to be better among English- than Spanish-speaking Latinos (Alegria et al., 2007).

The persistence of the disparity may be due, also, to the fact that blacks and Latinos are frequently found to be less likely to receive the newest and most effective medications for a wide range of mental disorders. Instead, they tend to be prescribed older medications, which pair the high cost of serious side effects with the low benefit of limited effectiveness (Melfi et al., 2000; Kuno & Rothbard, 2002; Herbeck et al., 2004; Pi & Simpson, 2005; Mallinger et al., 2006). While this is likely to temper treatment adherence per se, studies have also found considerable racial/ethnic divergence in rates at which many psychiatric medications are metabolized in the body (Smith & Mendoza, 1996). As a result, doses commonly used for whites are often too high for their nonwhite counterparts, leading to increased incidence of side effects (DHHS, 2001) and presumably greater reluctance to continue treatment.

The role of race/ethnicity in psychopharmacology has received more attention in recent years, with considerable advances in the fields of pharmacokinetics, pharmacogenetics, and pharmacodynamics (Lin, Anderson & Poland, 1995; Smith & Mendoza, 1996; Jones & Perlis, 2006).

Recent reviews have also called for a more comprehensive approach to understanding racial/ethnic differences in psychopharmacological response, emphasizing the potential importance of other racially/ethnically based variables, including culture, diet, health beliefs and behaviors, and general societal attitudes (Lin, Smith & Ortiz, 2001; Chaudhry et al., 2008).

If the field develops as expected, clinicians may be better able to take into account their patients' race/ethnicity and provide better suited pharmacological treatment. If paired with needed improvements in the diagnostic assessment of racial/ethnic minorities, these advances could lead to better prescribing practices and, in turn, better treatment adherence among nonwhites. Such improvements could make considerable strides in closing what appears to be the biggest white-nonwhite gap in the adequacy of mental healthcare.

## **CONCLUSION**

### **LIMITATIONS**

Results should be interpreted with five limitations in mind.

First, CPES methodology suffers a number of important threats to validity. Detailed in chapter 2 and similar studies based on CPES data (e.g., Wang et al., 2005, 2006; Uebelacker et al., 2006), these threats include the exclusion of homeless and institutionalized persons, the potential of systematic nonresponse and non-reporting to underestimate unmet need for treatment, and the tendency for self-reported service use to overestimate administrative treatment records. Because the focus was on the quality of outpatient treatment, the exclusion of homeless and institutionalized populations presented less of a problem than it had in chapter 2. Since outpatient treatment quality was quantified largely by numbers of visits, however, the common discrepancy between self-reported and administrative data could have resulted in overestimates of the rates of adequate care.

Second, incomplete and inconsistent assessment of DSM-IV disorders posed potential problems as well. In the previous chapters, use of respondents with no history of mental disorders as a reference group problematized the incomprehensiveness of the surveys' diagnostic assessment by running the risk of including respondents with non-assessed disorders in the purportedly non-

disordered group. Fortunately, the fact that analyses of treatment adequacy were necessarily restricted to respondents with recent disorders (i.e., depression and anxiety) reduced the potential impact of this problem. However, inconsistencies in the surveys' diagnostic coverage remained problematic.

For example, as mentioned in chapter 2, assessment of specific phobia was unique to the NCS-R, so that NCS-R respondents with specific phobia – but without other included disorders – were excluded from the analyses. Meanwhile, comparable NLAAS and NSAL respondents were misguidedly grouped with respondents with no mental health history and, in this chapter, subsequently excluded from the analyses as well. Since the median number of visits for specific phobia is lower than the corresponding figure for depression or any other anxiety disorder (Wang et al., 2005), this also likely led to overestimated rates of adequate treatment.

Third, as mentioned in chapter 3, it is unknown whether respondents who received both adequate psychotherapy and adequate pharmacotherapy actually received them in tandem, although this is the approach proven to lead to the most positive treatment outcomes (e.g., Pampallona et al., 2004; Hollon et al., 2005; de Maat et al., 2007; Cuijpers et al., 2009). Likewise, it is unclear whether the 60 or more days of prescription medication use were actually consecutive. Moreover, as mentioned in chapter 3 and evidenced in supplemental analyses in this chapter, many respondents treated by psychiatrists in the PSY profile also reported treatment by non-psychiatrist MH specialists and/or non-psychiatrist physicians, and it may be the case that it was the non-psychiatrist providers who rendered the adequate care. This could have led to overestimation of the adequacy of PSY profile care and underestimation of the adequacy of care rendered by non-psychiatrist providers.

Fourth, though my definitions of adequacy replicated those used in similar studies, Wang et al. (2005) point out that these definitions' relationships with important clinical outcomes have yet to be proven. While they are squarely based on scientifically established treatment guidelines, the curative value of these standards is an open question. In other words, receiving what this chapter refers to as “adequate” treatment may not necessarily result in symptom mitigation, functional improvement, and so on.

Finally, as in the previous chapter on multi-sector profile use, it is unknown to what degree the care respondents received – even within particular profiles – was a function of consumer choice, access, differential treatment by providers, and so on. This is a considerable limitation, considering the fact that bona fide efforts at closing the Latino-white gap in the adequacy of pharmacological treatment and black-white gaps in the adequacy of an array of therapies would require a more comprehensive understanding of these dynamics than my analyses could provide.

## **FUTURE DIRECTIONS**

As before, some of the limitations point to important directions for future research.

For example, one of the key limitations of this and previous chapters has been the descriptive, as opposed to explanatory, nature of its analyses. The analyses presented in this chapter shed little light on the interplay of consumer choice, access, provider behavior, and other factors in determining the adequacy of rendered care. Research able to uncover the complex dynamics underlying race differences in adequacy of care could help policymakers begin to bridge the gaps.

Furthermore, future research would do well to assess the degree to which mental healthcare that follows the guidelines outlined in this and other services studies actually results in positive clinical outcomes for its recipients. The CPES instrument did include, for each type of provider, a pair of items asking respondents to rate their satisfaction with the treatment and services rendered by the provider and reflect on how much they felt the provider had helped them. While discerning the relationship between adequacy as defined in these analyses and respondents' satisfaction with services and assessment of self-perceived improvement would likely yield interesting results, it would fall short of an objective evaluation of the clinical utility of these particular standards of care. Though its expense may be prohibitive, a longitudinal study would provide perhaps the best means of answering this question.

Perhaps most importantly, reviews have found that the clinical trials on which treatment guidelines are based rarely analyze the efficacy of the treatment under consideration specifically for any racial/ethnic minority group, tend to include only small numbers of minority participants, and

frequently fail to report any data on race/ethnicity at all, (Case & Smith, 2000; DHHS, 2005; Miranda et al., 2005; Sue & Zane, 2006; Mak et al., 2007). Results from some of the smaller studies that have explored the efficacy of evidence-based treatments among minority groups have called into question the one-size-fits-all assumption on which the definitions of adequacy used in this chapter are based (e.g., Chambless & Williams, 1995; Brown et al., 1999; Markowitz et al., 2000; Kohn et al., 2002).



Table 4.1. Socioeconomic and demographic characteristics among all respondents with 12-month depression and anxiety disorders and respondents with 12-month depression or anxiety disorders receiving any services, by race<sup>a</sup>

Variable	Attribute	All respondents with 12m dep. or anx.			Adjusted F <sup>b</sup>	Service users with 12m dep. or anx.			Adjusted F <sup>b</sup>
		Latino (n=563)	Black (n=731)	White (n=1003)		Latino (n=206)	Black (n=227)	White (n=443)	
<i>Education (in years)</i>	0-11	42.5 (2.1)	27.5 (2.1)	14.2 (1.5)	<b>29.69***</b>	41.0 (3.7)	23.9 (2.9)	14.5 (2.6)	<b>10.70***</b>
	12	25.3 (2.0)	34.5 (2.5)	28.8 (2.1)		23.1 (3.2)	30.7 (3.4)	26.7 (2.5)	
	13-15	21.0 (2.3)	23.8 (2.1)	30.8 (1.6)		21.5 (3.7)	25.5 (3.1)	29.6 (2.1)	
	16+	11.2 (1.2)	14.2 (1.9)	26.3 (2.3)		14.4 (2.1)	19.8 (3.4)	29.3 (3.0)	
	Employed	51.6 (3.2)	59.2 (2.1)	67.4 (1.7)	<b>16.95***</b>	47.4 (5.5)	54.7 (3.5)	63.0 (3.1)	<b>6.88***</b>
<i>Work status</i>	Unemployed	9.7 (1.7)	13.0 (1.3)	3.6 (.7)		6.1 (2.4)	13.4 (2.3)	3.1 (.9)	
	Out of WF	38.7 (2.6)	27.9 (1.7)	29.0 (2.4)		46.5 (5.6)	32.0 (3.4)	33.8 (2.6)	
	Uninsured	31.2 (3.1)	23.3 (1.8)	13.5 (1.0)	<b>35.15***</b>	19.4 (4.4)	19.6 (2.9)	10.0 (1.4)	<b>7.07**</b>
	Private	39.0 (3.3)	44.8 (2.8)	62.7 (1.9)	<b>32.38***</b>	40.9 (4.8)	48.2 (4.0)	61.1 (2.9)	<b>10.69***</b>
	Public	29.3 (3.2)	39.9 (2.1)	22.4 (1.8)	<b>15.82***</b>	42.0 (4.1)	46.1 (4.2)	27.5 (2.4)	<b>12.38***</b>
<i>Sex</i>	Other	16.0 (1.8)	9.5 (1.6)	18.4 (1.4)	<b>7.36***</b>	15.7 (3.4)	8.3 (2.0)	19.9 (2.2)	<b>4.68*</b>
	Female	59.0 (3.0)	70.5 (2.2)	64.9 (1.8)	<b>3.72*</b>	61.9 (3.4)	67.2 (3.2)	70.3 (2.8)	2.16
	18-34	50.0 (1.8)	39.4 (2.5)	33.4 (1.7)	<b>10.17***</b>	37.6 (2.5)	26.9 (3.6)	29.4 (2.5)	1.10
	35-49	28.6 (2.1)	36.5 (2.7)	39.3 (1.6)		38.4 (4.2)	44.3 (4.9)	43.1 (2.3)	
	50+	21.5 (2.0)	24.1 (2.1)	27.4 (1.4)		24.0 (3.7)	28.7 (3.6)	27.5 (2.6)	
<i>Region</i>	Northeast	18.6 (2.1)	19.8 (1.7)	21.8 (4.6)	<b>7.72***</b>	20.5 (3.0)	22.1 (1.9)	21.4 (5.7)	<b>4.74***</b>
	Midwest	8.7 (2.9)	21.9 (2.8)	25.7 (2.5)		7.0 (2.7)	28.6 (4.1)	23.8 (2.7)	
	South	27.5 (5.0)	47.6 (3.0)	31.6 (3.5)		25.2 (5.8)	35.2 (3.8)	32.9 (4.0)	
	West	45.2 (4.7)	10.7 (1.4)	20.8 (3.6)		47.3 (5.8)	14.0 (2.4)	21.9 (3.5)	
	Currently	54.5 (3.2)	31.0 (2.2)	48.7 (2.0)	<b>10.82***</b>	56.4 (5.7)	34.3 (3.2)	47.2 (2.8)	<b>3.52**</b>
<i>Marital status</i>	Formerly	19.8 (1.8)	29.7 (2.2)	27.5 (1.5)		27.8 (5.0)	32.2 (3.0)	29.0 (1.7)	
	Never	25.7 (2.5)	39.2 (2.4)	23.9 (1.8)		15.8 (1.9)	33.5 (3.8)	23.8 (2.7)	

<sup>a</sup> Weighted data from the Collaborative Psychiatric Epidemiology Surveys (CPES), 2001-2003.

<sup>b</sup> The adjusted F is a variant of the second order Rao-Scott adjusted chi-square statistic. Significance is based on the adjusted F and its degrees of freedom.

<sup>c</sup> Categories are not mutually exclusive; respondents can report more than one source of coverage. Adjusted F values based on separate analyses of prevalence of each coverage source (including none).

<sup>d</sup> p≤.10, \*p≤.05, \*\*p≤.01, \*\*\*p≤.001 (two-tailed tests).

Table 4.2. Percentage of service users with 12-month depression and anxiety disorders receiving adequate and potentially adequate therapies, by multi-sector profile of care<sup>a</sup>

Profile	Adequate <sup>b</sup>			Any therapy	Potentially adequate <sup>c</sup>			
	Psycho-therapy	Pharmaco-therapy	Combin. therapy		Psycho-therapy	Pharmaco-therapy	Combin. therapy	
PSY	39.1 (5.6)	41.3 (5.4)	23.2 (3.9)	57.2 (7.0)	90.3 (4.7)	73.4 (3.8)	72.4 (3.8)	91.4 (4.8)
OMH+GM	50.0 (6.0)	19.2 (3.1)	8.2 (2.6)	61.0 (8.0)	85.3 (4.3)	67.3 (4.0)	60.4 (5.5)	92.2 (3.2)
OMH-only	32.6 (3.6)	—	—	32.6 (5.9)	74.8 (2.8)	—	—	74.8 (5.5)
GM-only	—	13.8 (2.9)	—	13.8 (3.0)	—	63.7 (4.6)	—	63.7 (4.6)
HS-only	—	—	—	—	—	—	—	—
CAM-only	—	—	—	—	—	—	—	—
Adjusted F <sup>d</sup>	1.38	10.95***	12.21***	14.82***	2.07	1.52	2.45	7.71***

<sup>a</sup> Weighted data from the Collaborative Psychiatric Epidemiology Surveys (CPES), 2001-2003.

<sup>b</sup> Adequate psychotherapy consists of 8+ visits to a mental health specialist lasting 30+ minutes; adequate pharmacotherapy consists of 4+ visits to a physician and 60+ days of an appropriate prescription medication, and can be provided in the PSY, OMH+GM, and GM-only profiles.

<sup>c</sup> Potentially adequate psychotherapy and pharmacotherapy consist of 2+ visits to any mental health specialist or physician, respectively, or being in ongoing treatment with any mental health specialist or physician, respectively, at time of interview.

<sup>d</sup> The adjusted F is a variant of the second order Rao-Scott adjusted chi-square statistic. Significance is based on the adjusted F and its degrees of freedom.

<sup>o</sup> p≤.10, \*p≤.05, \*\*p≤.01, \*\*\*p≤.001 (two-tailed tests).

Table 4.3. Percentage of service users with 12-month depression and anxiety disorders receiving adequate and potentially adequate therapies in any of the multi-sector profiles of care capable of providing them<sup>a</sup>

Therapy	Capable profiles	Adequate <sup>b</sup>	Potentially adequate <sup>c</sup>
Psychotherapy (n=470)	PSY, OMH+GM, OMH-only	39.8 (3.7)	86.2 (2.6)
Pharmacotherapy (n=638)	PSY, OMH+GM, GM-only	25.9 (2.7)	68.2 (2.5)
Combination therapy	PSY, OMH+GM	19.6 (4.2)	69.5 (3.3)
Any therapy (n=748)	PSY, OMH+GM, OMH-only, GM-only	37.3 (2.8)	78.4 (2.6)

<sup>a</sup> Weighted data from the Collaborative Psychiatric Epidemiology Surveys (CPES), 2001-2003.

<sup>b</sup> Adequate psychotherapy consists of 8+ visits to a mental health specialist lasting 30+ minutes; adequate pharmacotherapy consists of 4+ visits to a physician and 60+ days of an appropriate prescription medication.

<sup>c</sup> Potentially adequate psychotherapy and pharmacotherapy consist of 2+ visits to any mental health specialist or physician, respectively, or being in ongoing treatment with any mental health specialist or physician, respectively, at time of interview.

Table 4.4. Percentage of service users with 12-month depression and anxiety disorders receiving adequate therapies, among users of multi-sector profiles capable of providing them and among all service users, by race<sup>a</sup>

Therapy	Users of capable profiles			Adjusted F <sup>f</sup>	All users			Adjusted F <sup>f</sup>
	Latino	Black	White		Latino	Black	White	
Psychotherapy <sup>b</sup>	38.6 (5.5)	24.4 (3.7)	41.4 (4.4)	3.17 <sup>o</sup>	21.5 (3.0)	12.2 (2.1)	21.6 (2.9)	2.85 <sup>o</sup>
Pharmacotherapy <sup>c</sup>	29.1 (5.3)	16.1 (2.6)	26.5 (3.2)	2.1	20.4 (3.5)	11.4 (2.0)	20.5 (2.5)	2.71 <sup>o</sup>
Combination therapy <sup>d</sup>	27.7 (6.7)	12.3 (2.5)	19.4 (5.0)	1.4	11.1 (3.1)	5.1 (1.2)	8.1 (2.3)	1.0
Any therapy <sup>e</sup>	35.9 (3.8)	23.4 (3.2)	38.6 (3.4)	<b>4.42*</b>	30.8 (3.3)	18.5 (2.7)	34.0 (3.1)	<b>6.22**</b>

<sup>a</sup> Weighted data from the Collaborative Psychiatric Epidemiology Surveys (CPES), 2001-2003.

<sup>b</sup> Adequate psychotherapy consists of 8+ visits to a mental health specialist lasting 30+ minutes, and can be provided in the PSY, OMH+GM, and OMH-only profiles.

<sup>c</sup> Adequate pharmacotherapy consists of 4+ visits to a physician and 60+ days of an appropriate prescription medication, and can be provided in the PSY, OMH+GM, and GM-only profiles.

<sup>d</sup> Adequate combination therapy consists of adequate psychotherapy along with adequate pharmacotherapy, and can be provided in the PSY and OMH+GM profiles.

<sup>e</sup> Any adequate therapy consists of adequate psycho-, pharmaco-, or combination therapies, and can be provided in the PSY, OMH+GM, OMH-only, and GM-only profiles.

<sup>f</sup> The adjusted F is a variant of the second order Rao-Scott adjusted chi-square statistic. Significance is based on the adjusted F and its degrees of freedom.

<sup>o</sup> p≤.10, \*p≤.05, \*\*p≤.01, \*\*\*p≤.001 (two-tailed tests).

Table 4.5. Binomial logistic regression predicting effect of race, treatment profile, and socio-demographic characteristics on likelihood of receiving adequate therapies among respondents with 12-month depression and anxiety disorders using profiles capable of providing them<sup>a</sup>

Variable	Psychotherapy <sup>b</sup> (n=480)				Pharmacotherapy <sup>c</sup> (n=638)			
	Evidence-based		Broadened		Evidence-based		Broadened	
	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI
Intercept	.2	(.0-2.3)	49.0***	(4.9-484.8)	11.4**	(2.2-59.5)	3.8	(.5-27.2)
Race, Latino (ref white)	1.0	(.6-1.9)	.9	(.3-2.5)	.8	(.4-1.6)	.9	(.5-1.5)
Race, black (ref white)	.6 <sup>o</sup>	(.3-1.1)	.7	(.4-1.3)	.6 <sup>o</sup>	(.3-1.1)	.7	(.4-1.2)
Profile, OMH+GM (ref PSY)	1.5	(.6-3.5)	.3*	(.1-.9)	.3***	(.1-.6)	.7	(.4-1.6)
Profile, OMH-only (ref PSY)	.6	(.3-1.3)	.2***	(.1-.5)				
Profile, GM-only (ref PSY)					.2***	(.1-.4)	.6 <sup>o</sup>	(.3-1.0)
<i>Socioedemographic characteristics</i>								
Educ., 0-11 (ref 12)	.6	(.3-1.3)	.3*	(.1-.9)	.7	(.2-2.5)	.7	(.3-1.3)
Educ., 13-15 (ref 12)	3.2***	(1.7-5.9)	1.1	(.4-2.8)	.9	(.4-2.1)	.9	(.5-1.6)
Educ., 16+ (ref 12)	3.3***	(1.7-6.8)	1.1	(.4-3.3)	.5	(.2-1.3)	.7	(.4-1.3)
Out of WF (ref employed)	2.2**	(1.3-3.8)	.7	(.3-1.7)	2.2**	(1.4-3.6)	1.1	(.7-1.9)
Insurance, other (ref none)	1.1	(.6-1.9)	3.4*	(1.0-11.4)	1.6	(.8-3.0)	2.1*	(1.0-4.1)
Sex, female	1.3	(.7-2.2)	2.9**	(1.5-5.6)	1.3	(.8-2.3)	1.4	(.8-2.4)
Age, 18-34 (ref 35-49)	1.3	(.8-2.2)	.6*	(.3-1.0)	1.6	(.9-2.9)	.7	(.4-1.4)
Age, 50+ (ref 35-49)	.3***	(.1-.5)	.6	(.3-1.4)	.9	(.5-1.4)	.7	(.4-1.2)
Region, Midwest (ref NE)	.6	(.3-1.4)	1.0	(.5-1.9)	.4*	(.2-1.0)	1.1	(.5-2.4)
Region, West (ref NE)	1.7	(.8-3.7)	3.9*	(1.3-11.4)	1.8	(.9-3.7)	1.3	(.6-2.6)
Married, formerly (ref currently)	2.0 <sup>o</sup>	(.9-4.3)	1.5	(.6-2.5)	1.8*	(1.0-3.1)	1.3	(.9-1.9)

<sup>a</sup> Weighted data from the Collaborative Psychiatric Epidemiology Surveys (CPES), 2001-2003.

<sup>b</sup> Adequate psychotherapy consists of 8+ visits to a mental health specialist lasting 30+ minutes, and can be provided in the PSY, OMH+GM, and OMH-only profiles.

<sup>c</sup> Adequate pharmacotherapy consists of 4+ visits to a physician and 60+ days of an appropriate prescription medication, and can be provided in the PSY, OMH+GM, and GM-only profiles.

<sup>d</sup> Adequate combination therapy consists adequate psychotherapy along with adequate pharmacotherapy, and can be provided in the PSY and OMH+GM profiles.

<sup>e</sup> Any adequate therapy be provided in the PSY, OMH+GM, OMH-only, and GM-only profiles.

<sup>o</sup>p≤.10, \*p≤.05, \*\*p≤.01, \*\*\*p≤.001 (two-tailed tests).

Table 4.5 (continued). Binomial logistic regression predicting effect of race, treatment profile, and sociodemographic characteristics on likelihood of receiving adequate therapies among respondents with 12-month depression and anxiety disorders using profiles capable of providing them<sup>a</sup>

Variable	Combination <sup>d</sup> (n=370)				Any <sup>e</sup> (n=748)			
	Evidence-based		Broadened		Evidence-based		Broadened	
	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI
Intercept	.2	(.0-1.6)	3.3 <sup>o</sup>	(.9-12.6)	28.2*	(2.2-368.8)	144.7 <sup>o</sup>	(1.8-11656.2)
Race, Latino (ref white)	1.3	(.4-4.3)	.7	(.4-1.3)	.8	(.5-1.3)	1.1	(.5-2.5)
Race, black (ref white)	.6	(.3-1.5)	.9	(.5-1.6)	.5*	(.3-.9)	.6	(.3-1.3)
Profile, OMH+GM (ref PSY)	.2***	(.1-.5)	.4**	(.2-.8)	1.1	(.4-3.1)	1.1	(.3-4.8)
Profile, OMH-only (ref PSY)					.3**	(.1-.7)	.3*	(.1-.9)
Profile, GM-only (ref PSY)					.1***	(.0-.2)	.1***	(.1-.2)
<i>Sociodemographic characteristics</i>								
Out of WF (ref employed)	3.6**	(1.7-7.8)	.8	(.3-1.8)	2.1***	(1.4-3.2)	1.3	(.8-1.9)
Insurance, private (ref none)	.7	(.3-1.5)	1.3	(.6-2.7)	1.1	(.6-2.0)	1.9*	(1.0-3.7)
Insurance, other (ref none)	1.9	(.6-5.9)	2.9*	(1.3-6.4)	1.2	(.7-2.2)	2.1 <sup>o</sup>	(.9-4.9)
Sex, female	2.4*	(1.1-5.1)	1.7 <sup>o</sup>	(1.0-3.0)	1.1	(.7-1.9)	1.8*	(1.0-3.4)
Age, 18-34 (ref 35-49)	1.5	(.6-4.2)	.9	(.3-2.3)	1.4 <sup>o</sup>	(1.0-2.1)	.5**	(.3-.8)
Age, 50+ (ref 35-49)	.1***	(.0-.4)	.7	(.3-1.7)	.7	(.5-1.2)	.6	(.3-1.1)
Region, Midwest (ref NE)	.7	(.1-4.7)	1.2	(.7-2.1)	.4*	(.2-.8)	1.0	(.4-2.9)
Region, West (ref NE)	3.7 <sup>o</sup>	(.9-15.0)	2.6**	(1.3-4.9)	1.4	(.8-2.6)	1.2	(.5-3.4)
Married, formerly (ref currently)	3.9**	(1.7-9.3)	2.1 <sup>o</sup>	(.9-4.8)	1.6	(.8-3.0)	1.0	(.7-1.6)

<sup>a</sup> Weighted data from the Collaborative Psychiatric Epidemiology Surveys (CPES), 2001-2003.

<sup>b</sup> Adequate psychotherapy consists of 8+ visits to a mental health specialist lasting 30+ minutes, and can be provided in the PSY, OMH+GM, and OMH-only profiles.

<sup>c</sup> Adequate pharmacotherapy consists of 4+ visits to a physician and 60+ days of an appropriate prescription medication, and can be provided in the PSY, OMH+GM, and GM-only profiles.

<sup>d</sup> Adequate combination therapy consists adequate psychotherapy along with adequate pharmacotherapy, and can be provided in the PSY and OMH+GM profiles.

<sup>e</sup> Any adequate therapy be provided in the PSY, OMH+GM, OMH-only, and GM-only profiles.

<sup>o</sup>p≤.10, \*p≤.05, \*\*p≤.01, \*\*\*p≤.001 (two-tailed tests).

Table 4.6. Binomial logistic regression predicting effect of race and socio-demographic characteristics on likelihood of receiving adequate therapies among respondents with 12-month depression and anxiety disorders receiving any services<sup>a</sup>

Variable	Psychotherapy <sup>b</sup>				Pharmacotherapy <sup>c</sup>			
	Evidence-based		Broadened		Evidence-based		Broadened	
	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI
Intercept	.1***	(.0-.3)	.7	(.3-1.4)	.2***	(.1-.5)	.8	(.3-2.2)
Race, Latino (ref white)	1.0	(.6-1.7)	1.1	(.6-2.2)	.7	(.4-1.4)	.7 <sup>o</sup>	(.5-1.1)
Race, black (ref white)	.5*	(.3-1.0)	.8	(.6-1.3)	.5*	(.3-.9)	.6*	(.3-1.0)
<i>Socioedemographic characteristics</i>								
Educ., 13-15 (ref 12)	3.0***	(1.8-5.0)	1.5 <sup>o</sup>	(1.0-2.5)	1.2	(.5-2.7)	1.0	(.6-1.7)
Educ., 16+ (ref 12)	3.3***	(1.8-5.9)	1.7*	(1.1-2.7)	.8	(.3-1.8)	.7	(.5-1.2)
Out of WF (ref employed)	2.1**	(1.2-3.5)	1.2	(.7-1.8)	2.3***	(1.6-3.3)	1.3	(.9-1.9)
Insurance, public (ref none)	1.4	(.8-2.5)	1.7*	(1.0-2.8)	.9	(.4-1.8)	1.9**	(1.2-3.0)
Age, 18-34 (ref 35-49)	1.2	(.8-1.8)	.9	(.6-1.3)	1.1	(.6-1.8)	.4***	(.3-.7)
Age, 50+ (ref 35-49)	.2***	(.1-.4)	.5**	(.3-.8)	.8	(.5-1.3)	.8	(.5-1.2)
Region, Midwest (ref NE)	.5*	(.2-.9)	.6 <sup>o</sup>	(.4-1.1)	.3**	(.1-.7)	.7	(.4-1.3)
Married, formerly (ref currently)	2.0*	(1.2-3.4)	1.4 <sup>o</sup>	(1.0-1.9)	1.3	(.8-2.2)	.9	(.7-1.4)

<sup>a</sup> Weighted data from the Collaborative Psychiatric Epidemiology Surveys (CPES), 2001-2003; n=876.

<sup>b</sup> Adequate psychotherapy consists of 8+ visits to a mental health specialist lasting 30+ minutes, and can be provided in the PSY, OMH+GM, and OMH-only profiles.

<sup>c</sup> Adequate pharmacotherapy consists of 4+ visits to a physician and 60+ days of an appropriate prescription medication, and can be provided in the PSY, OMH+GM, and GM-only profiles.

<sup>d</sup> Adequate combination therapy consists adequate psychotherapy along with adequate pharmacotherapy, and can be provided in the PSY and OMH+GM profiles.

<sup>e</sup> Any adequate therapy be provided in the PSY, OMH+GM, OMH-only, and GM-only profiles.

<sup>o</sup>p≤.10, \*p≤.05, \*\*p≤.01, \*\*\*p≤.001 (two-tailed tests).

Table 4.6 (continued). Binomial logistic regression predicting effect of race and sociodemographic characteristics on likelihood of receiving adequate therapies among respondents with 12-month depression and anxiety disorders receiving any services<sup>a</sup>

Variable	Combination <sup>d</sup>				Any <sup>e</sup>			
	Evidence-based		Broadened		Evidence-based		Broadened	
	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI
Intercept	.0***	(.0-.1)	.4**	(.2-.7)	.4*	(.2-.8)	1.2	(.4-3.6)
Race, Latino (ref white)	1.0	(.3-2.9)	.8	(.5-1.5)	.8	(.5-1.2)	.7	(.4-1.4)
Race, black (ref white)	.7	(.3-1.5)	.9	(.6-1.5)	.5*	(.3-.8)	1.0	(.6-1.6)
<i>Socioeconomic characteristics</i>								
Educ., 16+ (ref 12)	2.6*	(1.2-5.6)	1.5°	(1.0-2.4)	1.5	(.7-3.1)	.9	(.4-2.3)
Out of WF (ref employed)	3.4***	(1.8-6.4)	1.2	(.8-1.9)	2.1***	(1.5-2.9)	.9	(.4-1.9)
Insurance, other (ref none)	1.1	(.5-2.5)	1.9°	(.9-4.2)	1.1	(.7-1.8)	2.8*	(1.2-6.1)
Age, 50+ (ref 35-49)	.1***	(.1-.4)	.5°	(.3-1.1)	.6*	(.4-.9)	.7	(.3-1.7)
Region, Midwest (ref NE)	.4	(.1-1.7)	.8	(.3-1.9)	.4***	(.2-.7)	1.1	(.6-2.1)
Region, West (ref NE)	2.0	(.5-8.0)	1.0	(.4-2.4)	1.1	(.6-2.0)	2.3*	(1.1-4.8)
Married, formerly (ref currently)	2.5***	(1.5-4.4)	1.1	(.7-1.6)	1.5°	(.9-2.4)	1.9	(.8-4.3)

<sup>a</sup> Weighted data from the Collaborative Psychiatric Epidemiology Surveys (CPES), 2001-2003; n=876.

<sup>b</sup> Adequate psychotherapy consists of 8+ visits to a mental health specialist lasting 30+ minutes, and can be provided in the PSY, OMH+GM, and OMH-only profiles.

<sup>c</sup> Adequate pharmacotherapy consists of 4+ visits to a physician and 60+ days of an appropriate prescription medication, and can be provided in the PSY, OMH+GM, and GM-only profiles.

<sup>d</sup> Adequate combination therapy consists adequate psychotherapy along with adequate pharmacotherapy, and can be provided in the PSY and OMH+GM profiles.

<sup>e</sup> Any adequate therapy be provided in the PSY, OMH+GM, OMH-only, and GM-only profiles.

°p≤.10, \*p≤.05, \*\*p≤.01, \*\*\*p≤.001 (two-tailed tests).



Table 4.7. Binomial logistic regression predicting effect of race and sociodemographic characteristics on likelihood of receiving adequate doctor visits and medication among respondents with 12-month depression and anxiety disorders receiving any services<sup>a</sup>

Variable	Doctor visits <sup>b</sup>		Medication <sup>c</sup>	
	OR	95% CI	OR	95% CI
Intercept	.4 <sup>o</sup>	(.2-1.0)	.4	(.1-1.4)
Race, Latino (ref white)	.9	(.5-1.8)	.5*	(.3-.9)
Race, black (ref white)	.7	(.4-1.2)	.3***	(.2-.4)
<i><b>Sociodemographic characteristics</b></i>				
Out of WF (ref employed)	2.2***	(1.6-3.1)	1.6*	(1.0-2.5)

<sup>a</sup> Weighted data from the Collaborative Psychiatric Epidemiology Surveys (CPES), 2001-2003; n=876.

<sup>b</sup> Adequate doctor visits consist of 4+ visits to a physician, and can be provided in the PSY, OMH+GM, and GM-only profiles.

<sup>c</sup> Adequate medication consists of 60+ days of an appropriate prescription medication. While only physicians in the PSY, OMH+GM, and GM-only profiles can prescribe medications, the oft long-term nature of psychopharmacological treatment means respondents without recent use of these profiles may nevertheless report recent use of medications.

<sup>o</sup>p≤.10, \*p≤.05, \*\*p≤.01, \*\*\*p≤.001 (two-tailed tests).

Table 4.8. Among respondents with 12-month depression and anxiety disorders, binomial and multinomial logistic regressions predicting effect of race and sociodemographic characteristics on likelihood of receiving inadequate medication vs. receiving adequate medication<sup>a, b</sup>

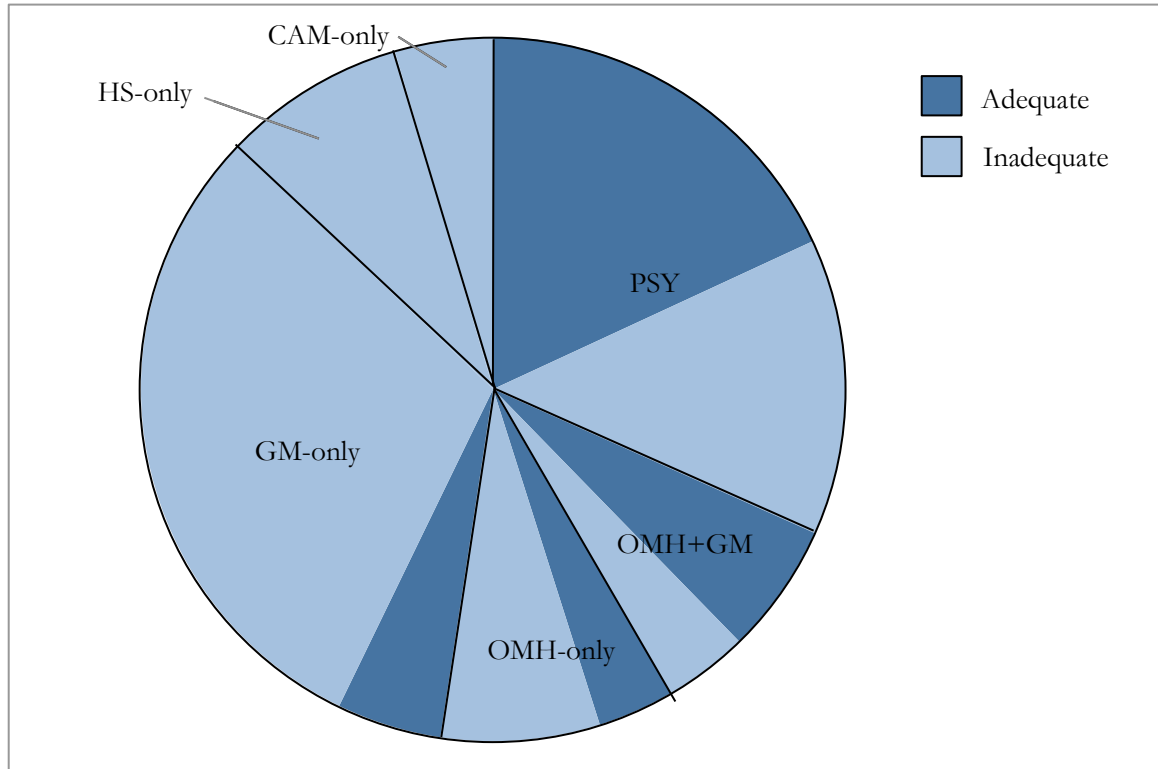
Variable	Binomial		Multinomial			
	Inadequate medication		Inappropriate medication		Appropriate med., <60 days	
	OR	95% CI	OR	95% CI	OR	95% CI
Intercept	.5	(.2-1.4)	.1**	(.0-.4)	.5	(.1-1.8)
Race, Latino (ref white)	1.8*	(1.1-3.1)	2.0*	(1.0-3.9)	1.7	(.7-4.1)
Race, black (ref white)	2.4**	(1.5-3.8)	3.2***	(1.6-6.4)	2.0 <sup>o</sup>	(1.0-4.0)
<i><b>Sociodemographic characteristics</b></i>						
Married, formerly (ref current.)	1.2	(.7-2.0)	2.3*	(1.0-5.3)	.8	(.4-1.6)

<sup>a</sup> Weighted data from the Collaborative Psychiatric Epidemiology Surveys (CPES), 2001-2003; n=552.

<sup>b</sup> Adequate medication consists of 60+ days of an appropriate prescription medication. While only physicians in the PSY, OMH+GM, and GM-only profiles can prescribe medications, the oft long-term nature of psychopharmacological treatment means respondents without recent use of these profiles may nevertheless report recent use of medications.

<sup>o</sup>p≤.10, \*p≤.05, \*\*p≤.01, \*\*\*p≤.001 (two-tailed tests).

Figure 4.1. Adequacy of care provided to individuals with 12-month depression and anxiety disorders, by multi-sector profile of care<sup>a, b, c</sup>



<sup>a</sup> Weighted data from the Collaborative Psychiatric Epidemiology Surveys (CPES), 2001-2003; n=876.

<sup>b</sup> Adequate psychotherapy consists of 8+ visits to a mental health specialist lasting 30+ minutes, and can be provided in the PSY, OMH+GM, and OMH-only profiles. Adequate pharmacotherapy consists of 4+ visits to a physician and 60+ days of an appropriate prescription medication, and can be provided in the PSY, OMH+GM, and GM-only profiles. Adequate combination therapy consists of adequate psychotherapy along with adequate pharmacotherapy, and can be provided in the PSY and OMH+GM profiles.

<sup>c</sup> In PSY and OMH+GM profiles, adequate therapy consists of any adequate therapy, including psychotherapy, pharmacotherapy, or combination therapy.

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## APPENDIX 4A: SAMPLE AND CELL SIZES

Table 4A.1. Dropped cases, by reason and race

Step	Reason	Race					Total
		Latino	Black	White	Asian	Other	
<i>Full CPES sample</i>		3620	6238	7587	2284	284	20013
1	Asian and other				-2284	-284	-2568
2	NSAL white			-891			-891
3	NSAL skip	-5	-152				-157
4	NCS-R part 1	-356	-513	-2516			-3385
5	Bipolar	-54	-236	-267			-557
6	Other disorder	-333	-655	-700			-1688
7	Missing MHT data		-43	-1			-44
<i>Final analytical sample, ch. 2</i>		2872	4639	3213	0	0	10723
8	No MHT	-2525	-4224	-2475			-9224
<i>Final analytical sample, ch. 3</i>		347	415	737	0	0	1499
9	No 12m dep. or anxiety	-141	-188	-294			-623
<i>Final analytical sample, ch. 4</i>		206	227	443	0	0	876



## APPENDIX 4B: OUTCOME MEASURES

Table 4B.1. Criteria for adequate and potentially adequate care and capable providers and profiles for psychotherapy and pharmacotherapy

Therapy	Psychotherapy	Pharmacotherapy
Criteria for adequate care	Eight or more sessions, lasting on average 30+ minutes	Four or more visits, with 60+ days of appropriate prescription med.
Criteria for potentially adequate care	Two or more visits or ongoing treatment (at time of interview)	Two or more visits or ongoing treatment (at time of interview)
Capable providers	Psychiatrist, psychologist, social worker in MH setting, counselor in MH setting, other mental health specialist	Psychiatrist, general practitioner or family doctor, other medical doctor
Capable profiles	PSY, OMH+GM, OMH-only	PSY, OMH+GM, GM-only

Table 4B.2. Prescription drugs included in antidepressant and anxiolytic categories

Drug class	CPES drug names <sup>a</sup>
Antidepressants	Adapin™, amitriptyline, amoxapine, Anafranil™, antidepressant, Asendin™, Aventyl™, Bupropion™, Celexa™, citalopram, clomipramine, desipramine, Desyrel™, doxepin, Effexor™, Elavil™, fluoxetine, fluvoxamine, imipramine, isocarboxazid, Janimine™, Ludiomil™, Luvox™, maprotiline, Marplan™, mirtazapine, moclobemide, Nardil™, nefazodone, Norpramine™, nortriptyline, Pamelor™, Parnate™, paroxetine, Paxil™, phenelzine, protriptyline, Prozac™, Remeron™, sertraline, Serzone™, Sinequan™, Surmontil™, Tofranil™, tranylcypromine, trazodone, Triavil™, trimipramine, venlafaxine, Vivactil™, Wellbutrin™, Zoloft™, Zyban™
Anxiolytics	alprazolam, amobarbital, Amytal™, Ativan™, Buspar™, buspirone, chloridiazepoxide, clonazepam, clorazepate, Dalmane™, diazepam, Doral™, Equanil™, estazolam, flurazepam, Gen-Xene™, halazepam, Halcion™, hydroxyzine, Klonopin™, Librax™, Libritabs™, Librium™, Limbitrol™, lorazepam, Luminal™, meprobamate, midazolam, Miltown™, mitran, moclobemide, Nembutal™, Neuramate™, oxazepam, Paxipam™, phenobarbital, prazepam, ProSom™, quazepam, Restoril™, secobarbital, Seconal™, Serax™, sodium phenobarbital, temazepam, Tranxene™, triazolam, Valium™, Versed™, Vistaril™, Xanax™

<sup>a</sup> Drug names as listed in CPES survey instrument, not an exhaustive list of generic and trade names of antidepressants and anxiolytics.

# APPENDIX 4C: SUPPLEMENTAL ANALYSES

Table 4C.1. Number of visits, average length of visit, and treatment status for respondents treated in the PSY, OMH+GM, and OMH-only profiles, by profile by type of provider<sup>a, b</sup>

Profile	OMH+GM, OMH-only		PSY	
Provider	Non-psych. MH specialist (n=184)	Psychiatrist (n=296)	Non-psych. MH specialist (n=152)	Psych. or non- psych. MH spec. (n=296)
<i>Number of visits</i>				
0-1	9.6 (2.7)	22.4 (8.1)	13.9 (4.9)	16.2 (6.1)
2-7	49.2 (5.2)	46.8 (5.0)	32.8 (4.5)	37.6 (4.4)
8+	41.2 (4.9)	30.7 (5.9)	53.3 (4.7)	46.3 (5.2)
Adjusted F <sup>c, d</sup>		2.35	2.22	1.46
<i>Average length of visit</i>				
0-29	10.5 (2.7)	26.3 (3.9)	9.0 (3.9)	13.3 (2.5)
30+	89.5 (2.7)	73.7 (3.9)	91.0 (3.9)	86.7 (2.5)
Adjusted F <sup>c, d</sup>		<b>11.89***</b>	.08	.60
<i>Treatment status</i>				
Still in treatment	51.4 (4.0)	30.1 (4.6)	30.5 (4.1)	26.8 (4.7)
Quit	48.6 (4.0)	69.9 (4.6)	69.5 (4.1)	73.2 (4.7)
Adjusted F <sup>c, d</sup>		<b>20.55***</b>	<b>16.15***</b>	<b>24.73***</b>

<sup>a</sup> Weighted data from the Collaborative Psychiatric Epidemiology Surveys (CPES), 2001-2003.

<sup>b</sup> Number of visits, average length of visit, and treatment status were coded to maximize treatment adequacy. In other words, for respondents reporting treatment from multiple providers, these variables represented the provider with the most visits, the provider with the longest visits, and the provider with whom the respondent was still in treatment (if any).

<sup>c</sup> The adjusted F is a variant of the second-order Rao-Scott adjusted chi-square statistic. Significance is based on the adjusted F and its degrees of freedom.

<sup>d</sup> Each adjusted F value corresponds to the comparison of respondents treated by the stated provider(s) in the PSY profile with respondents treated by non-psychiatrist MH specialists outside of the PSY profile (i.e., in the OMH+GM or OMH-only profile).

<sup>°</sup>p≤.10, \*p≤.05, \*\*p≤.01, \*\*\*p≤.001 (two-tailed tests).

Table 4C.2.a. Number of visits for respondents treated in the PSY, OMH+GM, and GM-only profiles, by profile by type of provider<sup>a</sup>

Profile	OMH+GM, GM-only		PSY	
Provider	Non-psych. physician (n=342)	Psychiatrist (n=296)	Non-psych. physician (152)	Psych. or non- psych. physician (n=296)
<i>Number of visits</i>				
0-1	44.4 (3.8)	22.4 (8.1)	33.1 (5.2)	18.1 (6.3)
2-3	34.9 (3.0)	20.4 (3.4)	40.8 (5.7)	23.0 (3.1)
4+	20.7 (2.9)	57.2 (7.6)	26.1 (4.8)	58.9 (7.5)
Adjusted F <sup>b, c</sup>	<b>10.93***</b>		1.51	<b>14.44***</b>

<sup>a</sup> Weighted data from the Collaborative Psychiatric Epidemiology Surveys (CPES), 2001-2003.

<sup>b</sup> The adjusted F is a variant of the second-order Rao-Scott adjusted chi-square statistic. Significance is based on the adjusted F and its degrees of freedom.

<sup>c</sup> Each adjusted F value corresponds to the comparison of respondents treated by the stated provider(s) in the PSY profile with respondents treated by non-psychiatrist physicians outside of the PSY profile (i.e., in the OMH+GM or GM-only profile).

<sup>o</sup>p≤.10, \*p≤.05, \*\*p≤.01, \*\*\*p≤.001 (two-tailed tests)

Table 4C.2.b. Medication use among respondents treated in the PSY, OMH+GM, and GM-only profiles, by profile<sup>a, b</sup>

	Profile		Adjusted F <sup>c</sup>
	OMH+GM, GM-only	PSY profile	
<i>All users of respective profile(s)</i>	(n=342)	(n=296)	1.05
No medication	25.8 (3.5)	20.1 (4.5)	
Inappropriate medication	9.0 (2.5)	5.8 (1.6)	
Appropriate medication, fewer than 60 days	12.4 (2.1)	14.8 (2.5)	
Appropriate medication, 60 days or more	52.7 (3.4)	59.3 (5.1)	
<i>Users of respective profile(s) reporting medication use</i>	(n=245)	(n=239)	.75
Inappropriate medication	12.2 (3.2)	7.3 (1.5)	
Appropriate medication, fewer than 60 days	16.7 (2.8)	18.5 (3.6)	
Appropriate medication, 60 days or more	71.1 (3.7)	74.2 (3.3)	

<sup>a</sup> Weighted data from the Collaborative Psychiatric Epidemiology Surveys (CPES), 2001-2003.

<sup>b</sup> For respondents reporting treatment from multiple physicians, it is not possible to determine which physician prescribed the medication in question. Additionally, respondents reporting treatment from multiple physicians and use of multiple medications may have received different prescriptions from different doctors.

<sup>c</sup> The adjusted F is a variant of the second-order Rao-Scott adjusted chi-square statistic. Significance is based on the adjusted F and its degrees of freedom.

<sup>o</sup>p≤.10, \*p≤.05, \*\*p≤.01, \*\*\*p≤.001 (two-tailed tests)

## Chapter 5: Conclusion

### SUMMARY

In this dissertation, I analyzed race differences in several aspects of outpatient mental health (MH) service use among individuals with past and current depression and anxiety disorders and non-disordered individuals. Using data from several large nationally representative epidemiological studies comprising the Collaborative Psychiatric Epidemiological Surveys (CPES) – the National Comorbidity Survey Replication (NCS-R), National Latino and Asian American Study (NLAAS), and National Survey of American Life (NSAL) – I focused on Latinos, blacks, and whites to assess how race impacted whether individuals received any MH services, where and from whom they received them, and how these services measured up against established guidelines for adequate care.

This inquiry seemed especially timely for two reasons. First, the racial/ethnic composition of the U.S. is changing dramatically, and non-whites are projected to constitute a full half of the population by 2050 (U.S. Census Bureau, 2004b; see Figure 1.2).<sup>1</sup> Second, recent healthcare legislation, requiring equal coverage of physical and mental health conditions (the Mental Health Parity and Addiction Equity Act of 2008) and extending coverage to millions of previously uninsured Americans (the Patient Protection and Affordable Care and the Health Care and Education Reconciliation Acts of 2010), holds the promise of improved access to mental health services. A better understanding of race disparities in the use of mental health services could help policymakers capitalize on the opportunities provided by the legislation at a time when the racial/ethnic groups most in need of improved care are rapidly expanding.

In the first analytic chapter, I replicated previous studies' findings regarding race differences in the use of any outpatient mental health services, showing Latinos and blacks were both less likely than comparable whites to report using services within the previous year. I found that, compared to whites, blacks and Latinos had lower prevalence rates of depression and anxiety disorders but that, among individuals who did have these disorders, blacks' and Latinos' disorders were more often

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<sup>1</sup> Non-whites include Hispanics (of any race), blacks, Asians, native Hawaiians and other Pacific Islanders, American Indians and native Alaskans, and others (.2%) (U.S. Census Bureau, 2007).

persistent and severe (but not comorbid). Those with the greatest need for services generally had the highest utilization rates. Use of services was strongly linked to the need for those services as well, as individuals whose recent disorders were severe and comorbid were most likely to have received concurrent treatment.<sup>2</sup> The dearth of significant race by need interaction terms showed the impact of need did not differ significantly among the three race groups. Within race groups, the neediest individuals were generally the most likely to have sought services; within need groups, whites were more likely to have sought services than Latinos or blacks.

In the second analytic chapter, I explored possible race differences in the particular sectors in which individuals received mental health services. There are five MH service sectors – psychiatry (PSY), other mental health specialty (OMH), general medical (GM), human services (HS), and complementary-alternative medicine (CAM) – which vary in their capacity to provide users with psycho- and pharmacotherapies. In other words, some are superior to others. Therefore, I sought to explore race differences in the sectors in which individuals received services. I used Wang et al.’s (2006) innovative measure of six multi-sector profiles, which included the PSY, OMH+GM, OMH-only, GM-only, HS-only, and CAM-only profiles. I found few race differences in the therapeutic capacity of individuals’ service profiles. Compared to whites, blacks were less likely use profiles capable of pharmacotherapy only and more likely to use profiles capable of neither psycho- nor pharmacotherapy. Latinos’ profile use did not differ significantly from profile use among whites. Service need was positively associated with use of profiles potentially capable of providing combination psycho- and pharmacotherapies and negatively associated with use of profiles potentially capable of providing only one therapeutic modality. As in the first analytic chapter, the effect of need was generally consistent across the three race groups. Although potentially positive, findings should be interpreted in the light of the previous chapter’s findings that Latinos and blacks

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<sup>2</sup> Treatment rates were highest among individuals with severe and comorbid disorders; however, contrary to my prediction, individuals with newly onset disorders were more likely to report treatment than individuals with persistent disorders.

were less likely than whites to receive *any* mental health services. In other words, overall, they were less likely than whites to use profiles capable of psycho- and/or pharmacotherapy.

In the third analytic chapter, I focused on individuals with recent depression and anxiety disorders and examined race differences in the degree to which the services they received met minimal adequacy standards for the care of these disorders. Since blacks were more likely than whites to use service profiles that could provide neither therapeutic modality, they were less likely to receive adequate psychotherapy, pharmacotherapy, or any adequate therapy. Even among users of similar profiles, blacks were less likely than whites to receive any adequate therapy and nearly significantly less likely to receive adequate psychotherapy or pharmacotherapy specifically. There were nearly no Latino-white differences. The exception was the finding that both Latinos and blacks were less likely than whites to receive a satisfactory course of prescription medication. This was not only because they were less likely than whites to take medications in the first place, but also because they were more likely than whites to receive medications other than those recommended for the treatment of their particular disorders. This disparity in the odds of receiving adequate pharmacological treatment was by far the most dramatic white-nonwhite disparity in the quality of mental health services rendered to individuals with depression and anxiety disorders. As above, since Latinos and blacks were less likely than whites to receive *any* services, analyses of the adequacy of care among service users only necessarily underestimated overall race differences on this measure.

Taken together, these findings point to persistent black-white disparities in mental health service use. At a disadvantage vis-à-vis comparable whites, blacks were less likely to receive any services, more likely to receive services from providers with no recognized capacity for delivering evidence-based therapies, and less likely to receive therapies that met established guidelines even when they did receive them from providers explicitly trained in their delivery.

Although Latino-white differences in the adequacy of received services were scarce and differences in the types of providers who delivered them nonexistent, Latinos were only half as likely as whites to receive any services in the first place, making the point that Latino-white inequities are

far from resolved. Additionally, an array of previous studies points to problems with the representativeness of Latino service-user samples, suggesting Latino service users diverge in important ways from the overall Latino population of the U.S. In brief, service use is associated with length of time living in the U.S., U.S. nativity, second- and especially third-generation status, and English-language proficiency (Alegria et al., 2007b). Importantly, these service use predictors are also associated with increased prevalence of psychopathology (Alegria et al., 2007a), which may explain the nearly complete lack of differences in the adequacy of received services found in the final analytic chapter. Therefore, the seemingly encouraging lack of Latino-white differences with regard to the settings in which services were received and the degree to which they met minimal adequacy criteria should be interpreted with this in mind.

In the sections that follow, I synthesize some of the most significant findings from the three analytic chapters, to draw a big picture of patterns of mental health service use and race differences therein. I consider the limitations of my analyses, along with possible directions for future research, and conclude with implications for policy and practice.

## **DISCUSSION**

### **SERVICE USE FOR DEPRESSION AND ANXIETY**

Recently, the Institute of Medicine (2002) issued a report that explicitly defined a service disparity as the difference in use that cannot be accounted for by differences in preference or need. This is important since, compared to Latinos and especially blacks, whites had higher prevalence rates of the depression and anxiety disorders that necessitated mental health service use in the first place (see Table 2.3). Indeed, as shown in Figure 5.1, black- and Latino-white gaps in 12-month mental health service use did narrow among individuals with 12-month depression and anxiety disorders. This finding suggests that, to a significant extent, the Latino- and black-white differences in the use of any mental health services were just that – differences, not disparities.

Nevertheless, blacks and Latinos remained less likely than comparable whites to report any service use even in analyses restricted to individuals with 12-month disorders and thus presumed

need for treatment. These disparities are especially troubling considering the fact that previous analyses have found that blacks' and Latinos' depressions and anxiety disorders tend to be more persistent and severe than whites' (Breslau et al., 2005, 2006; Williams et al., 2007; Himle et al., 2009; Lee, Sinkewicz & Muennig, 2010; see also Table 2.3). This suggests they are saddled with a disproportionate share of the burden of depressive and anxious illness in the U.S. To demonstrate, Figure 5.2 presents the racial composition of the total non-institutionalized adult population of the U.S., along with the racial composition of populations with any disorder, severe disorder, and untreated severe disorder. Blacks and Latinos were clearly overrepresented among individuals whose severe disorders went untreated.<sup>3</sup>

However, race disparities are only part of the problem, as many individuals with depression and anxiety disorders go un- or undertreated regardless of race. As Figure 5.3 underscores, more than half of all individuals who met diagnostic criteria for depression and anxiety disorders in the 12 month prior to interview reported receiving no mental health services during the same time period. In turn, fewer than one out of three of those who did seek services received care that was consistent with established standards for minimally adequate treatment of the depression and anxiety disorders with which they were afflicted.<sup>4</sup> Of these, most received either psychotherapy or pharmacotherapy only, and very few received combination therapy. In short, in a given year, seven out of eight individuals with depression and anxiety disorders receive either inadequate care or, twice as often, no care at all.

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<sup>3</sup> While controlling for confounding factors (e.g., SES) is impossible in this kind of analysis, supplementary analysis of individuals with severe 12-month disorders found blacks and Latinos were significantly less likely than whites to report service use, net of sociodemographic characteristics (i.e., education, work status, insurance coverage, sex, age, region of residence, and marital status). In analyses of all individuals with 12-month disorders, blacks and Latinos were no more likely than whites to have severe disorders, once analyses controlled for the aforementioned sociodemographic characteristics (results not shown).

<sup>4</sup> Based on available evidence-based guidelines (American Psychiatric Association, 1998, 2000, 2006), criteria for minimally adequate treatment required psychotherapy to consist of eight or more sessions lasting on average 30+ minutes with a psychiatrist or other mental health specialist and pharmacotherapy to consist four or more visits with a psychiatrist or other physician along with 60+ days of an appropriate prescription medication (e.g., Wang, Demler & Kessler, 2002; Wang et al., 2005, 2006; Neighbors et al., 2007; Alegria et al., 2008).



This striking shortfall is often obscured by services studies, which frequently focus either on the percentage of needy individuals who receive *any* services or the percentage of service users whose care meets minimal adequacy standards. However, it is consistent with calculations based on results published in such previous studies, which suggest that only around 15% of respondents with 12-month depression and anxiety disorders actually receive services consistent with evidence-based guidelines.<sup>5</sup>

#### **SERVICE USE IN THE ABSENCE OF DEPRESSION AND ANXIETY**

Part of the problem with underuse of services may be that scarce resources are expended on those who do not need them, as the tendency for some individuals with no apparent pressing need for services to nevertheless use them in an important part of the mental health services landscape in the U.S. As shown in Figure 5.4, individuals without recent depression or anxiety disorders made up a third of those whose 12-month service use could be considered intensive (i.e., eight or more 30+ minute sessions with MH specialist, or four or more MH-related visits with physician).<sup>6</sup> In turn, nearly two-thirds of these were individuals with no known history of disorders whatsoever. Furthermore, of individuals with non-intensive 12-month service use (i.e., all other service use), half had no concurrent disorders, and this group was almost evenly split between individuals with lifetime disorder histories and individuals with none.<sup>7</sup>

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<sup>5</sup> For example, using NCS-R data, Wang et al., (2005) found that 42.2% of respondents with anxiety disorders (i.e., agoraphobia, specific or social phobia, or generalized anxiety, posttraumatic stress, obsessive-compulsive, or separation anxiety disorder) received some services and that 33.8% of these service users received evidence-based care. This constituted 14.3% of all respondents with anxiety disorders ( $.338 \cdot 42.2 = 14.3$ ). The corresponding figures for mood disorders (including bipolar spectrum disorders) were 56.4 and 38.3, suggesting only 21.6% of all respondents with mood disorders received evidence-based care ( $.383 \cdot 56.4 = 21.6$ ).

<sup>6</sup> I modified standards for the minimal adequacy of care for depression and anxiety disorders to define the intensity of services for individuals without these disorders. I considered intensive service use to comprise eight or more sessions of 30+ minutes with any MH specialist or four or more MH visits with any physician and non-intensive service use to comprise all other service use, including services provided by human services and complementary-alternative medicine providers. Since no psychoactive prescription drug is really “appropriate” in the absence of disorder and these drugs are not as finite a resource as time with qualified professionals, their use was not included in the definition of service use intensity.

<sup>7</sup> Since the CPES survey instrument was not an all-inclusive assessment of DSM-IV diagnoses, it is likely some of these respondents had one or more of the non-assessed disorders. It is unlikely, however, that non-assessed disorders accounted for all or even a majority of service use among individuals without depression or anxiety disorders.

Several factors may account for what appears to be gross overuse of services by individuals with no apparent need for them. First, since the CPES survey instrument was not an all-inclusive assessment of DSM-IV diagnoses, it is likely that at least some of these respondents had one or more of the non-assessed disorders (e.g, schizophrenia, personality disorder). Additionally, a study focused specifically on mental health service use among individuals without 12-month disorders found that most such users nevertheless had other indicators of possible need for treatment, including lifetime disorders, subthreshold 12-month disorders, and other major 12-month stressors (e.g., rape, divorce) (Druss et al., 2007). The authors concluded that concerns about the misallocation of resources were generally overstated.

Though it may not constitute unequivocal waste of limited resources, the tendency to use services in the absence of concrete 12-month diagnoses was nevertheless strongest among whites. As highlighted in Figure 5.5, whites were more likely than blacks and Latinos to report 12-month service use, both among individuals with disorders in remission and among those with no known history of disorders. Therefore, alongside whites' higher prevalence of depression and anxiety disorders, their greater propensity for seemingly discretionary service use accounts for considerable shares of the black- and Latino-white differences in rates of mental health service use. The remainders, however, do rightfully constitute disparities.

## **REASONS FOR RACE DIFFERENCES**

There are several plausible explanations for race differences in the use of mental health services, including differences in socioeconomic status (SES), treatment need, and attitudes toward treatment. These factors could determine not only whether an individual seeks any mental health services, but could also determine where he seeks them and how closely the services he receives ultimately adhere to established guidelines.

### **Socioeconomic status**

The socioeconomic explanation may be the most intuitive, considering the persistence of considerable black- and Latino-white gaps on multiple measures of SES, including educational

attainment, income, health insurance coverage, and so on (Brown et al., 2000; U.S. Census Bureau, 2004a, 2010). Indeed, higher SES has been found to be associated with better access to mental health services (e.g., Brown et al., 2000; Kirby, Taliaferro & Zuvekas, 2006; Cook, McGuire & Miranda, 2007; Neighbors et al., 2007).

SES could influence mental health service use in several ways. For example, insurance coverage could facilitate the initiation of mental health services, and the more comprehensive the coverage, the more likely covered individuals might be to seek these services from mental health specialty providers and then to make more visits to these providers. Additionally, those with a prescription plan would be better able to afford psychiatric medication, if their providers deemed it to be appropriate.

Education could play an important part as well. Of course, individuals with college degrees may be more likely to have jobs with comprehensive health benefits, but they may also be more knowledgeable about where and how to seek services. They, too, may be more likely to consult specialists. Indeed, research has found that, perhaps due to the emphasis psychotherapy places on cognitive processes and communication, educational attainment is associated with seeking services from MH specialty providers (Wells et al., 1986; Wang et al., 2006)

As my analyses showed, however, controlling for these variables did little to temper the robust negative effects of black and Latino race/ethnicity on mental health service use.<sup>8</sup>

### **Need for treatment**

Since use of mental health services is, expectedly, strongly associated with the need for them, another compelling explanation for race differences in service use focuses on corresponding differences in need. Notably, there are two distinct, albeit often related, aspects of mental health service need – evaluated need assessed by clinical factors such as the presence of symptoms and perceived need assessed by the individual himself. Accordingly, this explanation posits whites' higher

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<sup>8</sup> Notably, my analyses did not control for income. However, this was because previous studies had not found income to be a significant predictor of use of any mental health services (Ojeda & McGuire, 2006), use of particular service profiles (Wang et al., 2006), or the adequacy of services received (Young et al., 2001).

mental disorder prevalence rates (Wang, Berglund & Kessler, 2000; Smith et al., 2006) and higher rates of self-perceived need for treatment (Zuvekas & Fleishman, 2008) as reasons for their higher rates of mental health service use.

### ***Evaluated need***

The assumption that higher prevalence rates may account for higher rates of mental health service utilization is a sensible one. Suffering from symptoms such as the despair of depression or the crippling apprehension of generalized anxiety disorder (GAD) might rightly lead an individual to seek services. The continued presence of such symptoms might keep the individual motivated to make numerous visits or to consent to a trial of a prescription psychiatric medication, either of which would increase the likelihood that his treatment would ultimately meet criteria for appropriate care.<sup>9</sup>

However, while my analyses bore out previous studies' findings of higher depression and anxiety disorder prevalence among whites, they also revealed that the relationship between race and evaluated need is somewhat more complex. This is because, as highlighted in some recent studies, though blacks and Latinos may be at lower risk of developing mental disorders in the first place, the disorders they do develop tend to be more persistent and severe than disorders among whites (Breslau et al., 2005, 2006; Williams et al., 2007; Himle et al., 2009; Lee, Sinkewicz & Muennig, 2010). My analyses bore out these findings as well, and it may be for this reason that controlling for evaluated need only tempered, but did not eliminate, the Latino- and black-white differences in mental health service use.

### ***Perceived need***

Perhaps a more promising avenue for explaining these race differences is self-perceived need, which has been shown to be a prominent predictor of the use of mental health services, whether in the presence of evaluated need or in its absence (Katz et al., 1997; Kessler et al., 1997, 2001; Mojtabai, Olfson & Mechanic, 2002; Dhingra et al., 2010). Like evaluated need, perceived

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<sup>9</sup> In fact, mental health services rendered in the absence of a diagnosable disorder cannot, by definition, be adequate.

service need could determine not only whether an individual uses services at all but also the particular milieu in which he seeks them and how closely they follow established guidelines.

For example, individuals who perceive a need for treatment may be more likely to seek services from professionals traditionally associated with the provision of MH care, such as psychiatrists and non-psychiatrist mental health specialists. On the other hand, individuals without self-perceived need may receive care from primary care providers, who may inquire about mental health symptoms in the course of a regular checkup or visit for another specific problem. They may also receive care from human services providers, if mental health symptoms come up in the course of their interaction with a social service agency or if they are compelled into treatment by the criminal justice system.

Self-perceived need may play an important part in determining the adequacy of services received as well. First, since some providers are more effective than others, any impact perceived need has on the particular providers an individual consults for care may have some bearing on its adequacy. Furthermore, perceived need can affect the adequacy of care even when it is rendered in similar settings. For example, considering the investment in time and often money, individuals with perceived need may be likely to attend more sessions of psychotherapy than individuals who feel no need for these sessions in the first place. Subjectively needy individuals may also be more likely to ask about the use of prescription medications – one of the most surefire means of securing a script (Kravitz et al., 2005) – and may be more likely to continue taking medications long after those who felt no need for them have stopped.

In turn, self-perceived need may play an important role in the relationship between race and mental health service use in a couple ways. First, blacks and Latinos tend to be less likely than whites to perceive a need for care, even when their levels of evaluated need are comparable (Ayalon & Alvidrez, 2007; Zuvekas & Fleishman, 2008; Nadeem, Lange & Miranda, 2009). Second, compared to whites, blacks and Latinos with depression and anxiety disorders tend to focus more on somatic symptoms, such as pain and fatigue, than affective symptoms, such as guilt and hopelessness (Robins

& Regier, 1991; Heurtin-Roberts, Snowden & Miller, 1997; Hart, 2005; Muñoz et al., 2005; Das et al., 2006; Tamayo, Rovner & Muñoz, 2007; Hunter & Schmidt, 2010). This may make them more likely to seek services from primary care providers though they are also at higher risk of non-detection in these settings than whites (Borowsky et al., 2000).

Notably, my analyses did not confirm this speculation – that blacks and Latinos may be especially likely to receive services in primary care settings – but this may be precisely because they are more likely to focus on somatic symptoms. Since the CPES instrument asked respondents specifically about services for “problems with emotions, nerves, or use of alcohol or drugs,” those focused on the somatic manifestations of their mental disorders may not have recognized the doctor’s visits they made for these symptoms as relevant. Though this may be precisely what puts them at greater risk of non-detection in primary care settings, it may also put them at greater risk of non-detection as service users in the CPES survey instrument. However, while this may overestimate the degree to which blacks’ and Latinos’ disorders go untreated altogether, findings regarding the inferiority of the general medical sector (Young et al., 2001; Wang, Demler & Kessler, 2002; Weilburg et al., 2003; Wang et al., 2005; see also Table 4.2) suggest it is unlikely to overestimate the degree to which they go undertreated.

Unfortunately, however, all of this is only conjectural. As I explain in more detail below (see “Limitations”), the NLAAS had large amounts of missing data on the two items that have elsewhere been used to operationalize self-perceived need. Therefore, I was not able to test these hypotheses in this particular study.

### **Attitudes toward mental health and mental health treatment**

Finally, race differences in mental health service use may be a function of corresponding differences in beliefs about and attitudes toward mental health and mental health treatment. Like SES and need for treatment, beliefs and attitudes can influence not only the use of any services but also the settings in which they are received and their degree of adherence to evidence-based guidelines.

For example, individuals who adhere to a medical model of mental health problems, who do not fear social stigma, and who believe in the effectiveness of treatment may be especially likely to seek and receive services. On the other hand, individuals who see mental health problems as personal failures, who fear being ostracized, and who doubt treatment can actually help them would probably be unlikely to do so. Especially when accompanied by validating past experiences, these beliefs and attitudes could be robust predictors of whether individuals seek treatment (e.g., Biegel, Farkas & Song, 1997; Alvidrez, 1999; Wahl, 1999; Kessler et al., 2001; Sirey et al., 2001a, 2001b; Ayalon & Alvidrez, 2007; Barney et al., 2006, 2009; Schomerus & Angermeyer, 2008; Schomerus, Matschinger & Angermeyer, 2009).

In terms of particular treatment settings, concerns about stigma may keep some individuals out of the offices of mental health specialists, psychiatrist and non-psychiatrist alike, while mistrust of the medical establishment in general may keep them away from non-psychiatrist physicians. Unwilling to seek services in healthcare settings, these individuals may rely, instead, on counsel from their ministers, priests, rabbis, or other spiritual advisors. Moreover, even among individuals who did receive services from healthcare providers, those who were skeptical about the efficacy of prescription medications or who were concerned about their addiction potential, may be much less likely to request a script. If they were nevertheless prescribed one of these medications, they may also be more likely to discontinue their use prematurely.

Such beliefs and attitudes are relevant for the relationship between race and multiple aspects of mental health service use, because many studies of attitudinal measures have found that blacks' and Latinos' views on mental health and mental health treatment tend to be less favorable to service use than those of comparable whites (Miller et al., 1996; Cooper-Patrick et al., 1997; Ortega & Alegria, 2002; Cooper et al., 2003; Gary, 2005; Anglin, Link & Phelan, 2006; Rao, Feinglass & Corrigan, 2007; Cruz et al., 2008; Menke & Flynn, 2009). Importantly, while these differences were often the function of blacks and Latinos just having more negative attitudes about treatment, this was not always the case. In some studies, it was that they were more likely to assume mental health

problems would improve on their own (Anglin, Link & Phelan, 2006) or that they simply preferred an approach centered on self-reliance (Ortega & Alegria, 2002) or spirituality (Miller et al., 1996). This was consistent with other studies, which have found these sorts of attitudes to be more predominant among blacks and Latinos than among whites (Neighbors, Musick & Williams, 1998; Peifer, Hu & Vega, 2000; Hines-Martin et al., 2003; Chatters et al., 2008).

Like the earlier suppositions about the mediating role of perceived need, however, notions about the influence of beliefs and attitudes remain speculative as well. As I explain below, though the CPES survey instrument did assess attitudinal factors, relevant items were restricted to individuals who had received treatment or had felt they needed it. The resulting sample sizes were prohibitively small, and I was unable to analyze these hypotheses in this study.

## **LIMITATIONS**

There were several notable limitations to my study, including the inability to assess the roles of perceived need and of beliefs and attitudes, the related incapacity to present a clear picture of the influences on treatment setting and quality, threats to validity resulting from aspects of CPES methodology, and small cell sizes for some analyses.

First, as discussed above, despite their apparent potential as explanatory pathways, neither self-perceived need nor beliefs about and attitudes toward mental health and healthcare were assessed in my analyses. This is especially problematic in light of the fact that my analyses were informed, in part, by the Andersen behavioral model of health service utilization (Andersen, 1968, 1995). Discussed in chapter 2, this model posited that service use is a function of several sets of factors, including (1) predisposing characteristics such as age, gender, race, and health beliefs; (2) enabling resources such as income, education, and insurance coverage; and (3) need, including evaluated need, as measured by clinical factors such as illness severity, and perceived need, as evaluated by the individual himself. While I assessed the role of enabling resources and was able to construct fine-tuned measures of evaluated need, my analyses neglected both perceived need and



health beliefs, without which any analysis of the relationship between race and use of mental health services is, in a sense, incomplete.

As I mentioned above, the CPES instrument did include measures of both self-perceived need and, albeit to a lesser degree, beliefs about and attitudes toward mental health and mental health service use. However, there were several problems with the resulting data. First, the survey instrument included two items that have elsewhere been used to operationalize self-perceived need, both for individuals who had received services and for individuals who had not (Katz et al., 1997; Mojtabai, Olfson & Mechanic, 2002; Garrido et al., 2009).<sup>10</sup> However, since the NLAAS, which accounted for the majority of my Latino sample, had large amounts of missing data on these items, I was unable to use these data to explore the role of race in the relationship between perceived need and multiple aspects of MH service use.<sup>11</sup>

Additionally, though the instrument did assess attitudinal factors – by asking respondents why they dropped out of treatment, why they delayed it, or why they decided to forgo it altogether – these items were necessarily restricted to individuals who had received treatment or had felt they needed it. Therefore, I was unable to use these data to evaluate the aforementioned tentative hypotheses regarding the role beliefs and attitudes may play in mediating the relationship between race and multiple aspects of the use of MH services.

Second, as I mentioned in the preceding chapters on the settings in which services were sought and the adequacy of services received, it remains unclear how much of the racial variation on these two important outcome measures is a matter of consumer choice, availability and accessibility of various services, differential treatment by different providers, and so on. Although an accurate assessment of the role of self-perceived need and, especially, the aforementioned beliefs and attitudes

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<sup>10</sup> In studies based on the original National Comorbidity Survey (NCS), respondents who reported no treatment within the past 12 months were asked whether, during this period, there had been a time when they felt they might need to see a professional. Affirmative answers were considered indications of self-perceived treatment need. Second, respondents who did report recent treatment were asked whether they did so voluntarily or under pressure from others. Voluntary treatment was considered an indication of perceived need.

<sup>11</sup> Supplemental analyses showed self-perceived need was more prevalent among the NLAAS Latino respondents who did have valid data on the relevant items than among Latino respondents surveyed as part of the NCS-R. While this suggested non-random distribution of missing cases, the specifics of this distribution remained unclear (Chen, personal communication, March 5, 2010).

could make a significant contribution to clarifying these complex relationships, such an assessment was not possible using data from the CPES project. This presents a considerable challenge to translating my findings into specific recommendations for policy and practice and thus constitutes a major limitation of my study.

Third, as explained in greater detail in the three analytic chapters (see especially chapter 2), there were numerous threats to validity inherent to CPES methodology.

Firstly, CPES data may lead to underestimation of unmet need for treatment for three reasons. To begin with, sampling excluded the homeless and institutionalized, who suffer from mental disorders at elevated rates (North et al., 2004; Bureau of Justice Statistics, 2006). Additionally, estimates of unmet treatment need are subject to distortion due to systematic nonresponse and non-reporting (Kessler et al., 2004). Finally, uncorroborated self-reports tend to overestimate service use, especially among individuals with serious disorders (Rhodes, Lin & Mustard, 2002; Rhodes & Fung, 2004). While all three factors likely contributed to an underestimation of untreated mental disorders, only the first is likely to have done so disproportionately for Latinos and especially blacks, who are overrepresented in the homeless and institutionalized populations (BJS, 2008; Congressional Research Service, 2005).

Secondly, validity is vulnerable to threats from certain aspects of CPES diagnostic assessment, several of which could also have lead to underestimation of unmet treatment need. Most importantly, the project's core diagnostic instrument, the Composite International Diagnostic Interview (CIDI), neglected some classes of disorders (e.g., personality disorders, schizophrenia), so that individuals with these non-assessed disorders could have been misclassified as having none.<sup>12</sup> Additionally, differences in the breadth of diagnostic coverage across the three CPES component surveys may have lead to the underestimation of untreated disorders disproportionately for blacks and Latinos. This is because, for example, only the NCS-R assessed specific phobia. As such, NCS-R

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<sup>12</sup> Importantly, comorbidity with one or more of the assessed disorders would prevent non-detection but may underestimate the scope or severity of the individual's illness (e.g., by neglecting to take note of the crippling symptoms of borderline personality disorder).

respondents with specific phobia – but without any of the universally assessed depressive or anxious disorders – were excluded from the analyses, while comparable black and Latino respondents in the NSAL and NLAAS remained in the sample, misclassified as having no mental disorder.<sup>13</sup> Finally, since the NLAAS did not assess bipolar disorders, most of the bipolar Latino respondents in my sample would have been misclassified as having major depression.

Finally, while the oversampling procedures of the NLAAS and NSAL provided large numbers of Latino and black respondents, respectively, disaggregating respondents' disorders by comorbidity and especially but persistence and severity (chapter 2) and restricting some analyses to service users (chapter 3) or service users with depression and anxiety (chapter 4) sometimes resulted in suboptimal cell sizes. Along with adjusting for complex design, this led to relatively large standard errors for some effects and may thus have increased the risk of type 2 error.

## **DIRECTIONS FOR FUTURE RESEARCH**

As highlighted in Figures 5.1 and 5.3, my study points to two major – and related – problems with the care of mental disorders in the U.S. First, in a given year, more than half of Americans with depression and anxiety disorders receive no mental health services whatsoever, and less than a third of those who do seek services receive care that is consistent with criteria for minimally adequate treatment (Fig. 5.3). Second, these shortfalls are more pronounced among Latinos and especially blacks than among their white counterparts (Fig 5.1). As I mentioned above, some of the most important shortcomings of my study lay in its inability to present a more comprehensive picture of the factors that impact mental health service use in general and may thus also mediate the relationship between race and the use of these services. Since clarification of these influences could make a great contribution toward specific policy recommendations to address the two major problems I just mentioned, the most promising avenue for future research may be one that winds its way to a better understanding of the dynamics that underlie them.

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<sup>13</sup> This is especially problematic considering specific phobia's high prevalence (Kessler et al., 2005) and low treatment rates (Wang et al., 2005).

Although the CPES did provide a useful measure of self-perceived need, the aforementioned problems with missing data in the NLAAS sample would likely render the use of this dataset to evaluate the role of such need ill-advised. What may be more fruitful in detailed analysis of the interplay between race, need, and different aspects of mental health service use, instead, is an approach that specifically targets service users. Concentrated on individuals who have actually used services, individual interviews, focus groups, and simple paper-and-pencil surveys could all be used to evaluate the aforementioned speculations about the important role of perceived need in determining not only the use of any services but also the particular settings in which services were sought and the extent to which they ultimately adhered to established treatment guidelines. Taking care to recruit satisfactory numbers of black and Latino respondents, such research could provide important insight into the relationships among perceived service need, race, and multiple aspects of the use of MH services.

Similarly, while the CPES did assess both attitudinal and experiential factors (e.g., delaying treatment because of concerns about what others would think, terminating treatment because of negative experiences with providers), it did so only for individuals with recent service use and/or perceived need for services. As in the research on self-perceived need, the optimal approach would likely target individuals who have actually used mental health services. In doing so, such research could clarify the ways in which beliefs and attitudes influenced the use of any services, along with the settings in which services were rendered and the degree of their adherence to evidence-based guidelines for the care of different mental disorders. As above, with sufficient numbers of black and Latino participants, individual interviews, focus groups, and pen-and-paper surveys could all be tailored to collect the data needed to explore these relationships.

Ultimately, any such study that analyzed the influence both of perceived need and beliefs and attitudes would help resolve the issue I raised above – namely, that there is a critical lack of clarity regarding the factors underlying racial variation in the specific settings in which individuals receive services and how closely these services follow established guidelines. While it is safe to assume that

beliefs about mental health, attitudes toward mental health treatment, and both the availability and accessibility of various services and providers all play a role, their relative influence remains an open question. Even just several well-planned focus groups could provide a revealing and valuable snapshot of these undoubtedly complex relationships and pave the path for further study, with the goal of issuing constructive recommendations for policy and practice.

## **IMPLICATIONS FOR POLICY**

Of course, implications for policy would be clarified by a better understanding of the aforementioned issues. Nevertheless, combined with findings from previous studies, my findings highlight a few important directions for policy improvement. The recommendation with the greatest promise of improvement is diversifying the mental health services workforce with regard to language ability, as well as race/ethnicity. Indeed, recruiting and retaining bilingual and racial/ethnic minority professionals was one of the suggestions in the final report of The President's New Freedom Commission on Mental Health, issued in 2003.

## **LANGUAGE**

Earlier, I pointed to potential problems with the representativeness of the Latino subsample I used for analyses of the settings in which services were received and their concurrence with criteria for adequate care. I highlighted the influence of language, noting that English-language proficiency has been shown to be associated with increased prevalence of both psychopathology and mental health service use (Alegria et al., 2007a, 2007b). However, the service use gap between English-proficient Latinos and Latinos whose English-language skills were more limited did not change significantly even when analyses accounted for differences in the prevalence of psychiatric disorders (Alegria et al., 2007b). Limited English proficiency (LEP) has been linked with lower use of mental health services in other studies as well (Brach, Fraser & Paez, 2005; Sentell, Shumway & Snowden, 2007). Furthermore, studies have linked LEP with reduced adherence to pharmacological treatment. In other words, Latinos with limited English-language ability are more likely to discontinue the use of psychiatric medications (Díaz, Woods & Rosenheck, 2005; Delgado et al., 2006; Hodgkin et al., 2007;

Lanouette et al., 2009). Finally, studies have shown LEP to be associated with reduced treatment intensity, as Latinos whose English-language skills are limited tend to make fewer visits than their English-speaking counterparts (Sue et al., 1991; Derosé & Baker, 2000; Gilmer et al., 2007).

All this calls attention to an issue that has been raised periodically for at least the past several decades – there is a considerable shortage of bilingual and bicultural providers qualified to serve the growing Latino population of the U.S. (Williams & Kohout, 1999; U.S. Dept. of Health and Human Services, 2001). Training more Spanish-speaking, culturally competent providers could not only lead to increased rates of mental health service use among Latinos but also improve the quality of services provided. In fact, there is reason to believe that diversifying the mental health services workforce in this way could actually produce results. For example, one study of matching between patients and providers found that, for individuals with limited English proficiency, ethnic and language match predicted not only duration but also outcome of treatment (Sue et al., 1991). Another study, which compared outpatient programs focused on delivering services to LEP clients and programs without such a focus, found higher treatment intensity among clients in the focused clinics (Gilmer et al., 2007).

In addition to this direct evidence, findings from other studies also point to the potential promise of workforce diversification. For example, studies have expectedly found language barriers in the evaluation of Latino patients with limited English proficiency, and studies of bilingual Latinos have found that patient evaluation varies as a function of language of interview (Del Castillo, 1970; Marcos et al., 1973; Price & Cuellar, 1981; Malgady & Costantino, 1998; Díaz et al., 2009). It seems sensible to conclude that a more linguistically and culturally competent MH workforce may not only bring in a greater number of Latino clients but also be better able to comprehend their symptoms and respond to them appropriately. Additionally, such a workforce would likely increase the chances that, when Latinos sought MH services, they would seek them from mental health specialty providers. Since, of all recognized providers, mental health specialists are most likely to render evidence-concordant care, increased use of their services may constitute an important improvement

per se. If their linguistic and cultural expertise led to the expected enhancements in treatment intensity and adherence, this improvement would be even greater.

### **RACE/ETHNICITY**

Mentally ill members of racial/ethnic minority groups would likely benefit from a mental health services workforce that was also more diversified in terms of its racial/ethnic composition, as studies have shown shortages of racial/ethnic minorities in the ranks of mental health specialists (Holzer, Goldsmith & Ciarlo, 1998; Manderscheid & Henderson, 1998). This is especially important in light of the fact that racial/ethnic minority members tend to prefer racially/ethnically matched providers (Terrell & Terrell, 1984; Sue et al., 1991; Nickerson, Helms & Terrell, 1994; Townes, Chavez-Korell & Cunningham, 2009). Notably, diversifying the workforce may not only increase overall rates of mental health service use, but may also lead individuals to consult providers (e.g., psychiatrists, psychotherapists) explicitly and extensively trained in the provision of evidence-based therapies. It could also enhance the quality of the care these minorities receive. For example, studies have found that racial/ethnic matching of patients and providers is associated with increased treatment intensity for both blacks and Latinos and, for Latinos, improved treatment outcomes as well (Sue et al., 1991).

### **IMPLICATIONS FOR PRACTICE**

In combination with findings from previous studies, my findings point to a few considerations for the improvement of practice. Most importantly, practitioners serving black and Latino populations should be mindful of findings regarding the misdiagnosis of racial/ethnic minority patients, racial/ethnic patterns in prescription of psychiatric medications, and racial/ethnic differences in compliance with pharmacological treatment.

### **MISDIAGNOSIS**

As mentioned in chapter 4, studies have pointed to problems with proper diagnosis of black and Latino patients. Namely, black and Latino individuals with bipolar spectrum disorders are frequently misdiagnosed as schizophrenic (Mukherjee et al., 1983). Diagnostic difficulties, both in

terms of misdiagnoses and missed diagnoses (i.e., non-detection), have also been found for blacks with depression and anxiety disorders (Flaskerud & Hu, 1992; Neal-Barnett & Smith, 1997; Baker & Bell, 1999; Borowsky et al., 2000). Though the exact reasons for these problematic tendencies in diagnosis are not yet completely clear, awareness of them may help providers steer clear of making similar mistakes.

### **PRESCRIPTION MEDICATION**

The tendency to misdiagnose black and Latino patients is consistent with my own finding that, among individuals reporting recent use of prescription psychiatric medications, Latinos and especially blacks were more likely than whites to have received medications other than the ones deemed appropriate for their particular disorders.<sup>14</sup> Additionally, previous studies have found that, even among users of a given class of medications (e.g., antidepressants, antipsychotics), blacks and Latinos are more likely than whites to receive older drugs, which tend to combine increased side effects with decreased effectiveness (Melfi et al., 2000; Kuno & Rothbard, 2002; Herbeck et al., 2004; Pi & Simpson, 2005; Mallinger et al., 2006). Practitioners with prescribing powers, including psychiatrists and non-psychiatrist physicians, should take care to provide all patients with the best medications available for the treatment of their specific conditions.

### **PHARMACOLOGICAL TREATMENT ADHERENCE**

While providing all patients with optimal medications is an important aspect of successful pharmacological treatment, equitable prescribing practices cannot be the providers' sole focus. This is because Latinos and especially blacks have repeatedly been found to be more reluctant than whites to use any psychiatric prescription medication in the first place (Dwight-Johnson et al., 2000; Cooper et al., 2003). Additionally, blacks express considerable skepticism about the drugs' effectiveness and significant concern about their side effects and addiction potential (Cooper-Patrick et al., 1997; Schnittker, 2003). While practitioners should address these issues with all of their clients, they would

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<sup>14</sup> Following similar studies, depression could appropriately be treated only with antidepressants, while anxiety disorders could be treated with either antidepressant or anxiolytic agents.



do well to be especially conscientious in addressing them with their black and Latino clients in particular.

Even once patients initiate a course of medication, however, practitioners should be mindful of potential problems with continued treatment compliance, as previous studies have pointed to a higher prevalence of noncompliance with pharmacological treatment among blacks and Latinos. This may be due to several factors. For example, adherence to pharmacological treatment has been linked to number of follow-up office visits (Bull et al., 2002), and some studies have found that blacks and Latinos make fewer such visits than whites (Hu et al., 1991; Sue et al., 1991; Derosé & Baker, 2000). Additionally, blacks and Latinos are more likely to receive older drugs, which, largely due to adverse side effects, have been shown to be discontinued at higher rates (Anderson & Tomenson, 1995; Hotopf, Hardy & Lewis, 1997; Dolder et al., 2002; Ascher-Svanum et al., 2006; Sheehan et al., 2008).

Blacks' and Latinos' reduced rates of compliance are problematic, because abrupt discontinuation of the use of psychiatric medication often leads to relapse of the initial symptoms (e.g., Pecknold et al., 1988; Noyes et al., 1991; Haddad, 2001; Cohen et al., 2006). Importantly, however, it appears that proper patient-physician communication can be quite effective in preventing sudden and ill-advised discontinuation of pharmacological treatment (Bull et al., 2002). Clarity regarding the expected duration of treatment as well as discussion of adverse side effects appear to be especially important (Bull et al., 2002).

Ideally, then, in their care of black and Latino clients, prescribing practitioners should concentrate on reaching the correct diagnosis, engaging in a comprehensive discussion of the pharmacological treatment process, and encouraging regular follow-up visits.

## **CONCLUSION**

"The problem of the twentieth century is the problem of the color line," W.E.B. Du Bois (1903) wrote at the turn of the last century, but, at least insofar as it comprises health disparities, the color line continues to be a problem in the twenty-first century as well. With the recent passage of landmark healthcare legislation and a dramatic demographic shift underway, the time is ripe for a

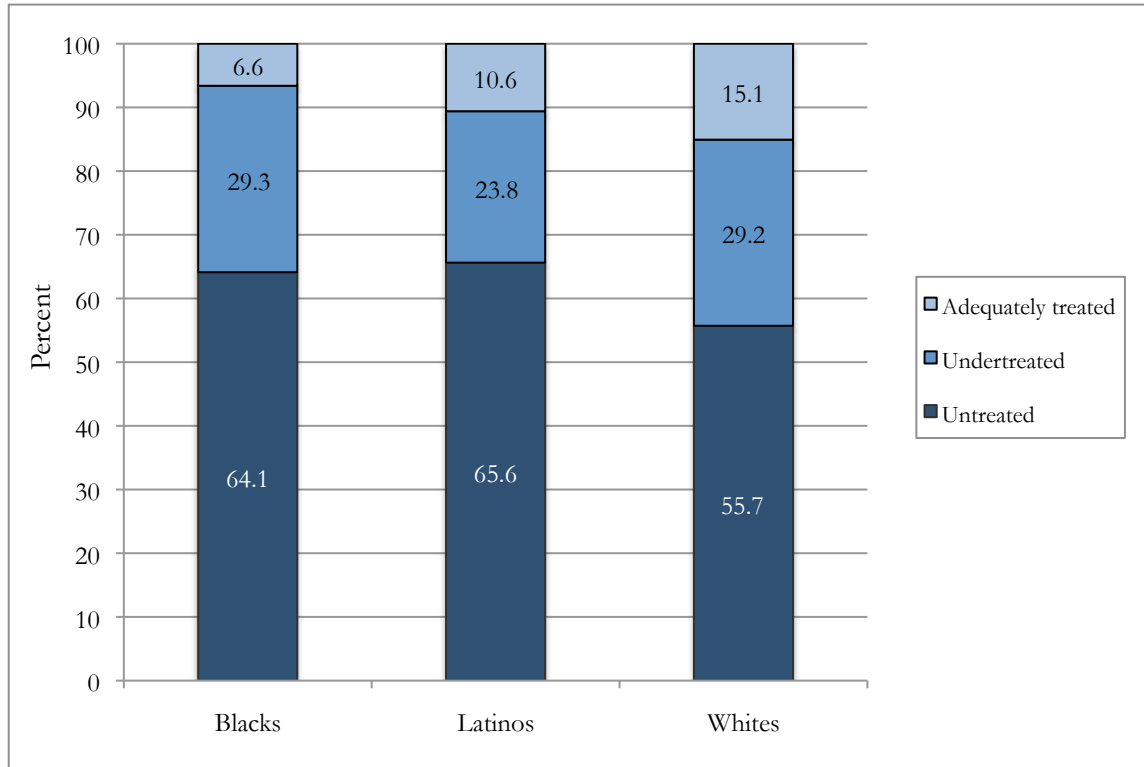
sustained effort to comprehend and then eradicate the many race disparities in health that continue to plague the United States today. The mental health disparities documented in my study – race differences in the persistence and severity of depression and anxiety disorders, in the rate at which individuals with these disorders receive services, in the settings in which these services are received, and in the extent to which they meet established standards for adequate care – are only some of the nation’s many health disparities, all of which were slated for elimination by the Department of Health and Human Services *Healthy People 2010* initiative (DHHS, 2000).

Designating the elimination of health disparities as one of its two overarching aims, *HP 2010* sought specifically to increase the proportion of adults with mental disorders who received treatment (Objective 18-9), to increase the number of primary care patients who received mental health screening and assessment (Obj. 18-6), to increase the number of states tracking consumer satisfaction with mental health services (Obj. 18-12), and to increase the number of states with an operational mental health plan addressing cultural competence (Obj. 18-13). The fact that it appears all four objectives will be retained in *Healthy People 2020* suggests there has been insufficient progress toward the relevant targets in the intermediate decade.<sup>15</sup> The proposed objectives for *HP 2020* underscore both the obstinacy of race disparities in multiple aspects of mental health service use and the continued need to endeavor to eradicate them.

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<sup>15</sup> Still under consideration, proposed objectives for *Healthy People 2020* are available here: <http://www.healthypeople.gov/hp2020/Objectives/TopicAreas.aspx>.

Figure 5.1. Untreated, undertreated, and adequately treated 12-month depression and anxiety disorders, by race (unadjusted)<sup>a, b, c</sup>

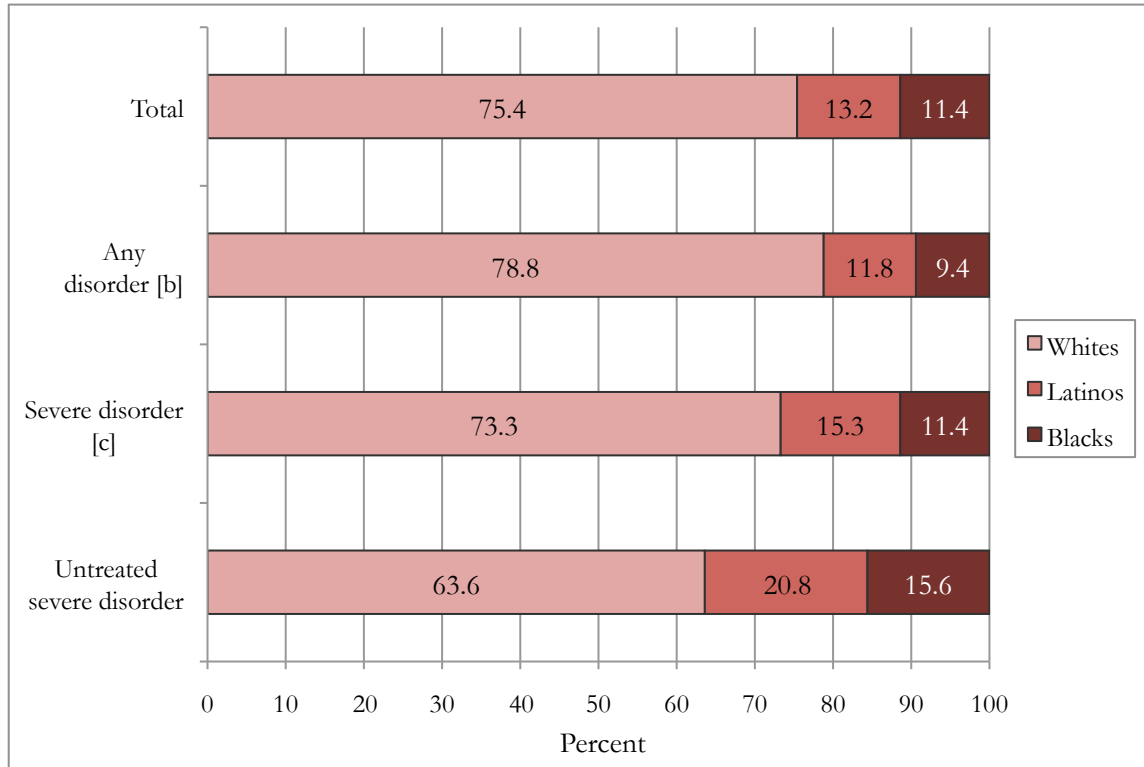


<sup>a</sup> Weighted data from the Collaborative Psychiatric Epidemiology Surveys (CPES), 2001-2003; n=2297.

<sup>b</sup> Percentages are not adjusted for covariates used in multivariate analyses.

<sup>c</sup> *Adequately treated* respondents received psychotherapy only, pharmacotherapy only, or combination therapy. *Psychotherapy* consisted of 8+ visits with a psychiatrist or non-psychiatrist mental health specialist lasting an average of 30+ minutes. *Pharmacotherapy* consisted of 60+ days of an appropriate medication plus 4+ visits of any duration to a psychiatrist or non-psychiatrist physician. *Combination therapy* consisted of psychotherapy along with pharmacotherapy. *Undertreated* respondents received treatment that fell short of these standards, including treatment in the human services and complementary-alternative medicine sectors. *Untreated* respondents received no treatment.

Figure 5.2. Racial composition of total population, and populations with any disorder, severe disorder, and untreated severe disorder<sup>a</sup>

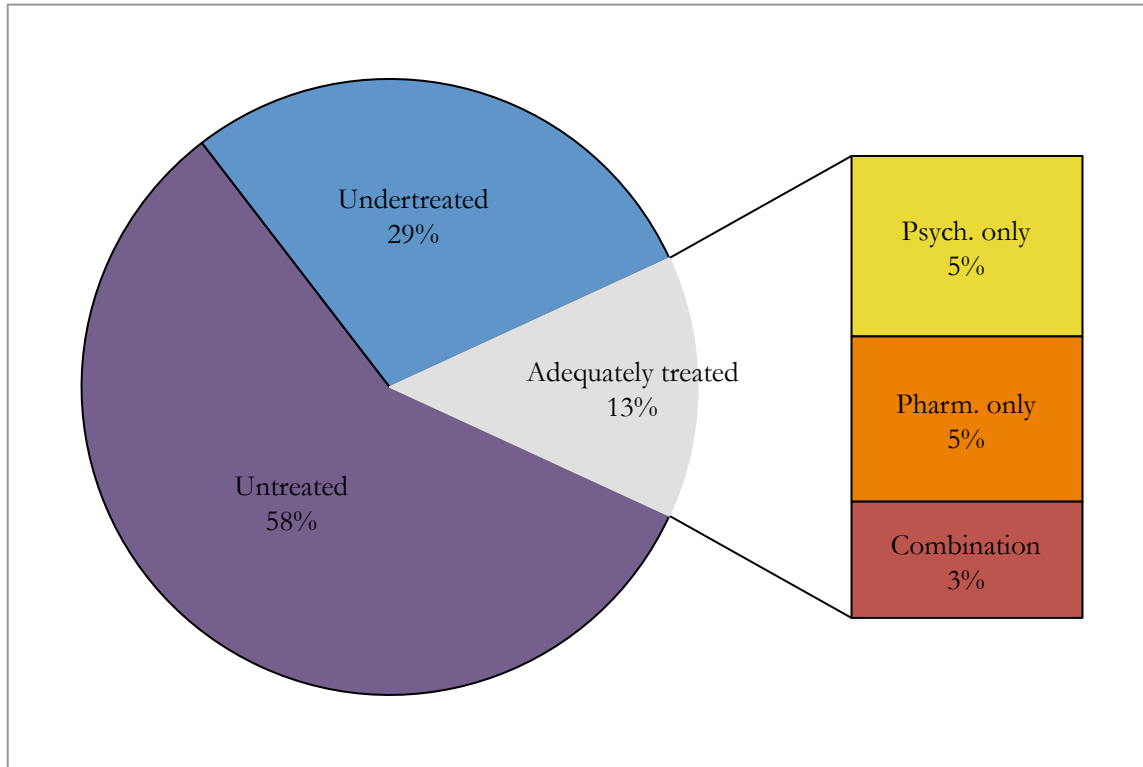


<sup>a</sup> Weighted data from the Collaborative Psychiatric Epidemiology Surveys (CPES), 2001-2003; n=10723.

<sup>b</sup> Depression included both major and dysthymic depressive disorders, while anxious disorders included panic disorder, agoraphobia, social phobia, generalized anxiety disorder (GAD), and posttraumatic stress disorder (PTSD).

<sup>c</sup> A depressive or anxious disorder was considered severe if it resulted in very severe impairment (score of 9 or 10) in 2+ Sheehan Disability Scale (SDS) domains, at least severe impairment (score of 7 or 8) in 3+ SDS domains, or 30+ days out of role, or was accompanied by a suicide attempt with serious lethality intent or substance dependence with physiological dependence syndrome. Severe depression could also be accompanied by a positive screen for psychosis.

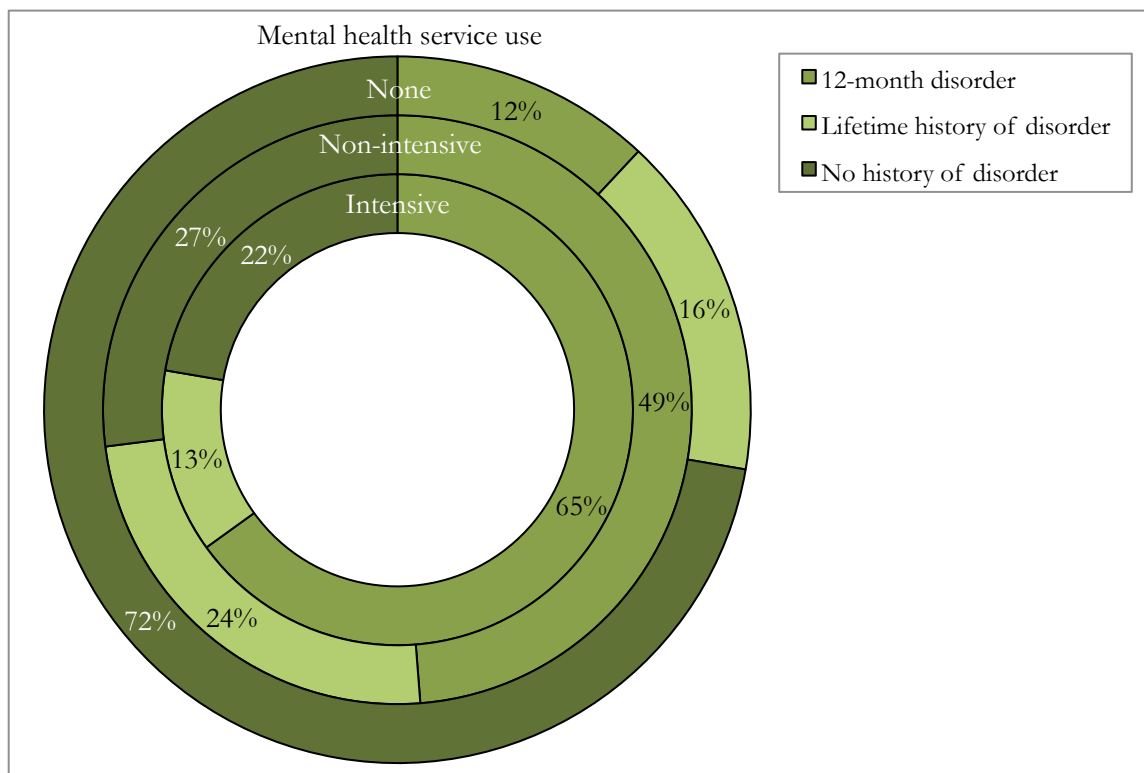
Figure 5.3. Untreated, undertreated, and adequately treated 12-month depression and anxiety disorders<sup>a, b</sup>



<sup>a</sup> Weighted data from the Collaborative Psychiatric Epidemiology Surveys (CPES), 2001-2003; n=2297.

<sup>b</sup> *Adequately treated* respondents received psychotherapy only, pharmacotherapy only, or combination therapy. *Psychotherapy* consisted of 8+ visits with a psychiatrist or non-psychiatrist mental health specialist lasting an average of 30+ minutes. *Pharmacotherapy* consisted of 60+ days of an appropriate medication plus 4+ visits of any duration to a psychiatrist or non-psychiatrist physician. *Combination therapy* consisted of psychotherapy along with pharmacotherapy. *Undertreated* respondents received treatment that fell short of these standards, including treatment in the human services and complementary-alternative medicine sectors. *Untreated* respondents received no treatment.

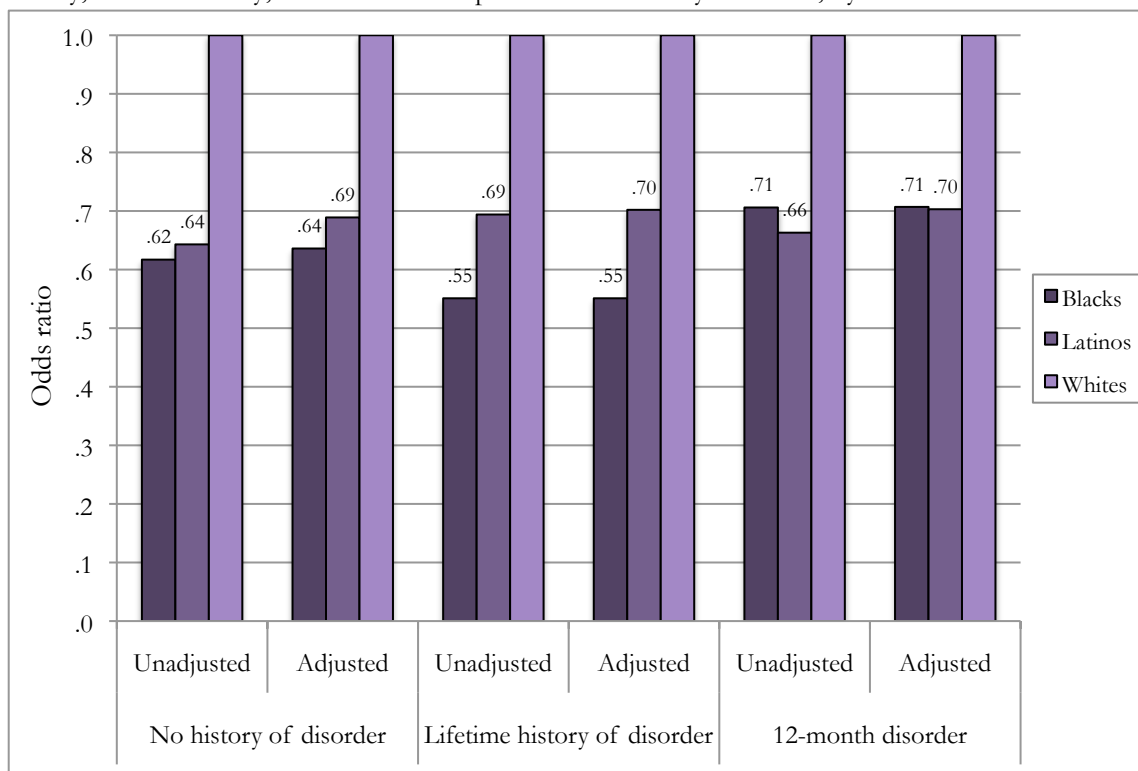
Figure 5.4. Depression and anxiety disorder history among individuals with none, non-intensive, and intensive mental health service use<sup>a, b</sup>



<sup>a</sup> Weighted data from the Collaborative Psychiatric Epidemiology Surveys (CPES), 2001-2003; n=10723.

<sup>b</sup> *Intensive service use* consisted of 8+ visits with a psychiatrist or non-psychiatrist mental health specialist lasting an average of 30+ minutes or 4+ visits of any duration to a psychiatrist or non-psychiatrist physician. *Some service use* consisted of use that did not meet these criteria, including use of the human services and complementary-alternative sectors.

Figure 5.5. Odds ratios of receiving any 12-month mental health services among individuals with no history, lifetime history, and 12-month depression and anxiety disorders, by race<sup>a</sup>



<sup>a</sup> Weighted data from the Collaborative Psychiatric Epidemiology Surveys (CPES), 2001-2003; n=10723.

<sup>b</sup> Adjusted odds ratios adjust for education, employment status, and insurance status.

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## CURRICULUM VITAE

**Education**

Rutgers College, Rutgers University : September 1998 – May 2002  
Bachelor of Arts [Psychology, sociology] : May 2002

Graduate School–New Brunswick, Rutgers University : September 2003 – October 2010  
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**Positions**

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Research Assistant  
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**Publications**

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