MENTAL HEALTH DISPARITIES IN RACIAL AND ETHNIC MINORITIES: 
THE IMPACT OF NATIVITY AND ETHNICITY ON DEPRESSION AND ANXIETY

HENNA BUDHWANI

SOCIOLOGY

ABSTRACT

This research examined factors associated with mental health outcomes for minority groups residing in the United States, with an emphasis on racial and ethnic minorities and a further segmentation between those born in the United States and those born outside the United States. Two theories were used: the Healthy Migrant Theory and Health Lifestyles Theory. In combination, they identified important elements, such as race/ethnicity, socioeconomic status, exposure to discrimination, and health lifestyle behaviors, thought to influence mental health outcomes.

Nine hypotheses were presented; support was mixed. Some support was found to support the idea that nativity, independently, influenced mental health outcomes (especially depression) as suggested by the Healthy Migrant Theory; however support was found substantiating the relationship between health lifestyle behaviors and negative mental health outcomes. Discrimination and acculturation influenced both depression and anxiety even with the inclusion of other measures.

Certain implications emerged. Since discrimination was overwhelmingly influential in determining mental health outcomes, the socio-political climate in the United States with the enactment of state based immigration regulations may be shifting the overall perception of immigrants, and minorities for that matter. Furthermore, alcohol
abuse (and smoking for the most part) was linked with higher rates of depression and anxiety, suggesting that health behaviors have the capacity to drive mental health outcomes even with the inclusion of race/ethnicity.
DEDICATION

I dedicated this work to my Imam, my family, and my supporters.

Shukhr Mowla.
It is Your blessings and benevolence that made this possible.

Karim Ismail Budhwani
I love you, and I dedicate this work to you.
There are no words to accurately describe the affection and admiration I hold for you.

Brahma Mubarak and Khidr Kishan
One day you will make decisions on your education and profession. Let this dissertation serve as a reminder that mediocrity is not an acceptable choice.

Do what you love, and do it well.
ACKNOWLEDGEMENTS

Most importantly, I’d like to thank Dr. Shelia Cotten. Her unwavering support was the force that kept me moving forward. I distinctly remember a conversation after I delivered my boys where she told me that I owed it to my children to finish this dissertation; that line resonated. I doubt I would have completed without her support and guidance. Plus, Dr. Cotten contributed an immense amount of time reading my work and contributing insights. Sincerely, thank you.

I’d also like to acknowledge my committee members, Dr. William Cockerham, Dr. Belinda Needham, Dr. Casey Borch, Dr. Patricia Sawyer, and Dr. Jeffrey Hall. I thank them for sticking with me through five years of writing and revising. Dr. Hall has been a non-judgmental and delightful sounding board. Glad Facebook exists to keep us connected. Dr. Cockerham’s extensive knowledge of theory required my work to be better; I do miss our Thai lunches. Dr. Sawyer’s handle on minority health (and minority aging) has been immensely helpful, and Dr. Needham’s willingness to step in saved this project from a potentially major administrative delay was greatly appreciated.

Finally, I’d like to thank Dr. Ferris Ritchey and Dr. Jeffrey Clair for taking a chance on a young woman with no sociology experience eight years ago; I hope to make you proud!
# TABLE OF CONTENTS

INTRODUCTION .............................................................................................................. 1

REVIEW OF LITERATURE AND THEORY .................................................................. 8

A. Healthy Migrant Theory ........................................................................................... 10
B. Ethnicity and Mental Health ..................................................................................... 26
C. Discrimination and Well-being ................................................................................. 30
D. Acculturation ............................................................................................................ 33
E. Mental Health among Ethnic Groups: Gender .......................................................... 36
F. Mental Health and Age .............................................................................................. 39
G. Socioeconomic Status ............................................................................................... 40
H. Health Lifestyles Theory: Smoking and Drinking.................................................... 44
I. Neighborhood............................................................................................................. 52
J. Summary .................................................................................................................... 53
J. Hypotheses ................................................................................................................. 54

RESEARCH METHODS ................................................................................................. 58

A. Description of Data Set and Data Collection Agencies ............................................ 58
B. Population, Data Collection, Sample, and Response Rate........................................ 61
C. Weights and Characteristics of the Data ................................................................... 64
D. Measures ................................................................................................................... 66
E. Analysis ..................................................................................................................... 73

RESULTS ......................................................................................................................... 76

A. Descriptive Statistics ............................................................................................... 76
B. Logistic Regression on the Full Sample ................................................................. 76

DISCUSSION ....................................................................................................................... 102

A. Theoretical Recap ................................................................................................... 102
B. Empirical Discussion .............................................................................................. 104
C. Limitations ............................................................................................................... 111
D. Future Research ..................................................................................................... 113
E. Conclusion ............................................................................................................... 114

REFERENCES ............................................................................................................... 117
LIST OF TABLES

Table 1: Population Size and Estimates for Blacks, Hispanics, and Asians Residing in the United States.................................................................2

Table 2: Response Rates of CPES Datasets..........................................................64

Table 3: Frequencies of Measures Pre and Post Weighting (Unweighted n = 20,013, Weighted n = 209,500,125)............................................................78

Table 4: Descriptive Statistics of Measures (n = 209,500,125).................................80

Table 5: Bivariate Analysis for Depression and Anxiety (n = 209,500,125)...............86

Table 6: Interaction between Nativity and Race/Ethnicity by Mental Health Outcomes (n = 17,241).................................................................91

Table 7: Logistic Regression on the Full Sample (n = 17,241), Depression Dependent Variable.................................................................96

Table 8: Logistic Regression on the Full Sample (n = 17,241), Anxiety Dependent Variable.................................................................100

Table 9: Summary of Hypotheses.................................................................105
CHAPTER ONE

INTRODUCTION

This research examines factors (e.g. socioeconomic, socio-demographic, discrimination, and acculturation) associated with mental health outcomes for minority groups residing in the United States, with an emphasis on racial and ethnic minorities and a further segmentation between those born in the United States and those born outside the United States. Exploring mental health differences in racial and ethnic minorities is important because these groups comprise a sizable and growing segment of the overall U.S. population (U.S. Census Bureau 2000; U.S. Census Bureau 2008; U.S. Census 2011) across all age cohorts. Furthermore, these groups tend to have different rates of mental illness as compared to the majority, White, American-born population (Morales et al. 2007; Kennedy et al. 2006), and their cultural background and migration experiences influence these rates (Finch et al. 2000; Redfield et al. 1936). Also, understanding what influences negative mental health outcomes is imperative in terms of prevention and treatment, which can be costly not just to the individual, but to families, communities, and society. These topics, plus others such as the role of gender, age, and income on mental health outcomes, will be discussed at length later in this dissertation. Table 1 shows the estimated percentage of populations of each minority group in the United States (U.S. Census Bureau 2000; U.S. Census Bureau 2008; U.S. Census 2011).
Table 1
Population Size and Estimates for Blacks, Hispanics, and Asians Residing in the United States

<table>
<thead>
<tr>
<th></th>
<th>% of Population U.S. Census 2000</th>
<th>% of Population U.S. Census Estimate 2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blacks</td>
<td>12.3%</td>
<td>13.1%</td>
</tr>
<tr>
<td>Hispanics</td>
<td>12.5%</td>
<td>16.7%</td>
</tr>
<tr>
<td>Asians</td>
<td>3.6%</td>
<td>5.0%</td>
</tr>
</tbody>
</table>

As illustrated in Table 1, Hispanics and Asians are growing in total percentage of population, while Blacks remain steady. Post the 2010 U.S. Census, 2011 estimates were released and are used in this project. Interestingly, not only does future U.S. Census data provide insight into population trends, but historic data does so as well in that it illustrates the population’s trajectory.

The 1850 U.S. Census was the first to collect nativity (where individuals residing in the United States were born), and from this beginning to 1930, foreign-born individuals residing in the United States increased from 2.2 million (9.7% of total population) to 14.2 million (Gibson and Lennon 2008, P1), over a 500% growth rate. This large influx of immigrants was primarily from European nations (such as, but not limited to, Ireland, the U.K., Poland, etc.) where the population was predominantly White. From 1930 to 1950, immigration into the United States declined so that only 6.9 percent of the total population was foreign-born in 1950. The decline in immigration continued through the 1970’s when the foreign-born population represented a historic low of 4.7 percent of the population (Gibson and Lennon 2008, P1-P2).
Starting in 1970, a shift occurred -- the population of ethnic minorities increased rapidly due to large-scale immigration, predominantly from Central America, Latin America (Hispanics), and Asia (Asians). The approximate 1997 foreign-born population was 25.8 million. As a percentage of total population, it increased from 4.7 percent in 1970 to 6.2% in 1980, to 7.9% in 1990, and to about 9.7% in 1997 (Gibson and Lennon 2008, P3). Furthermore in the last decade, there has been a dramatic rise in immigration, and the percentage of racial and ethnic minorities has passed 30% (U.S. Census Bureau 2000; U.S. Census Bureau 2008). This is almost one third of the total population, of which not all are foreign-born. Almost 20% of these minorities self-identify themselves as Asians or Hispanics (U.S. Census Bureau 2008).

As Hispanics, Asians, Afro-Caribbeans, and other ethnic minorities immigrate to the United States; their communities hold a more prominent role in overall population health, because they make up larger and larger percentages of the overall American population thus influencing overall community health metrics. The more heterogeneous a population, potentially the more diverse outcomes and behaviors due to varied cultural backgrounds and associated behaviors. In the following chapter, research illustrating differences in mental health outcomes will be examined; different groups of individuals exhibit different rates of mental illnesses, as well as differing rates of behaviors, such as smoking or drinking, and they have different migration experiences.

Interestingly, research has substantiated the fact that immigrants (non-American-born) are shown to exhibit better health outcomes, both mental and physical than their non-immigrant counterparts (Morales et al. 2007; Perez 2002; Scribner 1996). This seems counter-intuitive, because many immigrants come to the United States with lower levels
of education and survive on a lower income as compared to American-born Whites or American-born racial and ethnic minorities (Morales et al. 2007; Kennedy et al. 2006). The primary explanation for this health paradox can be explained through the Healthy Migrant Theory which asserts immigrants that make the migration to the United States are physically and mentally heartier than those who do not, creating a selection bias (Spiegel and Yassi 2004; Morales et al. 2007; Scribner 1996). As will be illustrated in Chapter Two, the Healthy Migrant Theory notes the importance of discrimination, acculturation, and race/ethnicity, in addition to social-demographic and socio-economic measures, to better understand difference in mental health outcomes.

Furthermore, as groups immigrate to another country they bring with them a cultural identity and a set of norms, values, and beliefs unique to their native environment some of which may pertain to their understanding and treatment of mental illnesses. These individuals may or may not align with the new country’s majority norms, values, and beliefs. The process by which the minority group adopts the majority’s behaviors and belief systems is known as acculturation (Finch et al. 2000; Redfield et al. 1936) and will be discussed extensively in Chapter 2, due to its linkage with mental health outcomes and its relation to ethnicity in the United States.

Discrimination is the negative effect felt by one group due to their minority status (Finch et al. 2000; Jackson et al. 1998). Discrimination may be based upon gender, age, ethnicity, or many other factors that identify the group as unique or different from the norm. Discrimination may occur at an individual level or may be embedded in large societal structures (Finch et al. 2000, 297) at a macro level. Discrimination is intentional and meant to be harmful (Finch et al. 2000; Jackson et al. 1998). The reason
discrimination has been included in this exploration of ethnicity and mental health outcomes is that discrimination has been shown to have detrimental effects on the mental well-being of the individual and the group. Those who encountered discrimination were shown to manifest worse mental health outcomes than those from the same group who had not encountered such biases (Karlsen and Nazroo 2002, 624). And, minorities were more likely to experience discrimination than non-minorities residing in the United States (Phillips 2003, 349).

Acculturation is the process of becoming closer to the majority norm (Finch et al. 2000; Jackson et al. 1998), in the case of this analysis that would be immigrants -- Hispanics, Afro-Caribbeans, and Asians, becoming more American and less in line with their original cultural frame. Acculturation is theoretically relevant to this analysis, because as racial and ethnic minorities acculturate or adopt more American ideals, norms, values, and behavioral patterns, these groups of individuals lose their mental health advantage (Morales et al. 2007, 477), as found in the Healthy Migrant Theory.

Although acculturation and discrimination have been included because they were directly relevant measures to certain ethnic minority groups (Phillips 2003, 350), other measures known to impact mental health, regardless of ethnicity, have also been included to attempt to explain which factors play a larger role than others (such as sociodemographic characteristics (age, gender), socioeconomic status (income, education), and health behaviors (alcohol consumption, smoking behavior)) in determining mental health outcomes of a given group. The sociodemographic factors of age and gender are highly correlated with mental illness (Kessler et al. 2005; CDC 2009), but age and gender are not linked with racial or ethnic minority self-identification.
Negative mental health outcomes and onset of mental illnesses tend to appear earlier rather than later in life (Kessler et al. 2005, 593), and although females are more likely to attempt suicide, males are more likely to die from suicide (CDC 2009, P2). Also, ethnic minority women experience severe psychological distress more so than their white counterparts; (CDC 2009; P1-P4). Age and gender have a link to mental health outcomes, and some studies have been able to loosely interconnect ethnicity with the two. Thus, age and gender are related to mental illness and necessary to include in mental health research efforts (Kessler et al. 2005; CDC 2009).

Socioeconomic status, more specifically education and income, are also important in understanding why groups differ in mental illnesses (LaVeist 2005, 31). For example, Newport (2007) found that 27% of respondents who earned less than $20,000 annually reported their mental health as excellent in comparison to 58% who earned $75,000 or more; 37% reported their mental health as excellent of those with less than a high school degree versus 60% of those with a post graduate degree (Newport 2007, P2). In analyzing mental health outcomes of racial/ethnic minority groups, mixed results have been found in relation to education and income. Lower income and education appear to attenuate the benefit of being an immigrant. Lower education and lower income tend to lead to worse mental health outcomes among Hispanic and Asian immigrants, but not to the extent seen in their American-born ethnic group counterparts (Moscicki et al. 1989; Williams 2002). The inclusion of education and income in this analysis offers another element by which to understand the overall relationship between immigration, ethnicity, and mental illness.

In addition to socioeconomic and sociodemographic measures, behavioral measures, specifically health behaviors, were examined in this research project –
specifically, alcohol consumption and smoking. The National Institute of Mental Health (NIMH) found that over 40% of individuals with negative mental outcomes (e.g., depression, anxiety, etc.) smoked cigarettes (NIMH 2009, P2). NAMI, the National Alliance on Mental Illness, found that almost 40% of alcohol abusers have a mental illness and 29% of the mentally ill abuse drugs or alcohol (NAMI 2009, P3). Although correlation does not indicate causality, the inclusion of these measures allows for a more thorough examination of factors affecting mental health outcomes among racial and ethnic minorities residing in the United States.

In summary, the purpose of this study is to examine the roles of race and ethnicity, immigration, acculturation, discrimination, sociodemographics, socioeconomic measures, and specific behavioral factors in relation to mental health outcomes among Hispanics, Asians, and Afro-Caribbeans. The next chapter reviews relevant prior literature and presents a theoretical framework to show how these factors interrelate to affect mental health outcomes among racial and ethnic minority groups residing in the United States.
CHAPTER TWO

REVIEW OF LITERATURE AND THEORY

The purpose of this project is to identify factors which impact mental health outcomes for different racial and ethnic minority groups (specifically Blacks, Afro-Caribbeans, Asians, and Hispanics), the possible reasons why these factors have effects or varying effects, and to explain to what extent these factors vary, both across ethnicity groups and within the same group with different nativities.

The Healthy Migrant Theory (HMT) is used with research on measures shown to affect mental health outcomes in ethnic and racial minorities. Previous research has documented health behaviors, sociodemographics, and socioeconomic status as having independent effects on mental health outcomes and this research is summarized in this chapter.

The HMT attempts to explain differences in physical and mental health between native born and foreign-born persons within a racial or ethnic group. Health behaviors extend the scope of the HMT by adding factors potentially influenced by group beliefs and values into the overall equation. These behaviors (e.g., drinking or smoking) have been correlated with mental health outcomes (Arehart-Treichel 2003; NIMH 2009), thus were pertinent to this exploration. In addition, socioeconomic status is included as a basic building block of much sociological work; education and income tend to vary across groups, and it is likely to vary across race or ethnicity. The inclusion of education
and income ensures that socioeconomic variations were accounted for across groups and across mental health outcomes.

HMT asserts that immigrants are healthier than the American-born due to structural forces and individual agency facilitating or hampering migration (Morales et al. 2007; Perez 2002). Health behaviors are influenced by both agency and structure (Cockerham 2005, 57) in that group behaviors are driven by group norms, values, and beliefs, but are ultimately performed through individual action. Socioeconomic status is a result of both structural forces and agency.

This chapter is organized by reviewing the most central components to this research effort first, followed then by secondary and tertiary elements. Therefore, a significant portion at the beginning of the chapter examines the Healthy Migrant Theory, followed by discussion on secondary measures relating to immigration and minority status, such as ethnicity, discrimination, and acculturation. Next, research focused on sociodemographics (age and gender) and socioeconomic status (education and income) is evaluated. This section concludes with by a discussion of Health Lifestyle Theory and a summary of literature on the correlations between smoking, excessive alcohol consumption, and mental health outcomes. In combination, these perspectives offer insight both into the pathways to negative mental health outcomes and why differences exist in mental health outcomes between foreign-born immigrants as compared to American-born racial and ethnic minorities.
A. Healthy Migrant Theory

To paraphrase the work of Kennedy et al. (2006), the healthy immigrant effect, also known as the Healthy Migrant Theory – a framework which notes that immigrants (immigrants are citizens of one nation that migrate to live and work in another nation) are healthier than those born in the United States – is now well accepted, well documented, and well-supported by the available research. However the mechanisms by which better mental health outcomes are seen in immigrant groups has yet to be fully understood. A “health paradox” has been reported among many immigrant groups, in particular, Asians and Hispanics (Morales et al. 2007, 477). These groups of individuals, although residing in the United States, on average have had less access to health services, less wealth, less income, less education, and may not be proficient in English (Morales et al. 2007; Kennedy et al. 2006). However, their physical and mental health outcomes were better than those of American-born Whites or their American-born ethnic counterparts (Morales et al. 2007, 477). “The reasons for the health paradox… are not entirely clear. The healthy migrant effect is one explanation mentioned in the literature. It posits that healthier persons are more likely to emigrate than their relatively less healthy compatriots, which results in a greater longevity in the emigrant population” (Morales et al. 2007, 488).

Though the health paradox has existed for many decades and has been cited numerous times throughout a variety of disciplines (Spiegel and Yassi 2004; Morales et al. 2007; Scribner 1996), it was Claudio Perez’s (2002) work with Canadian immigrants, that linked fragmented statistics, loosely defined concepts, and multiple findings from a
variety of disciplines to create the Healthy Migrant Theory used in this current study. His work was built upon three basic, corroborated facts:

1. Compared to non-immigrants (American-born) of the same ethnicity, immigrants had significantly better health outcomes, especially in terms of chronic conditions. This effect remained evident even when accounting for sociodemographic and socioeconomic influences. Furthermore, the longer an immigrant or immigrant group (foreign-born) resided in an industrialized nation, such as Canada or the United States, the greater their odds for reporting any chronic condition (Perez 2002, 89). Chronic conditions are conditions which are manageable, but perhaps not normally curable. For example, heart disease may be controlled with diet and medication, but it is not cured by those methods. Additionally, many chronic conditions are believed to be caused by lifestyle choices, such as smoking, excessive alcohol consumption, poor diet, or lack of exercise (Cockerham 2005).

2. Newly immigrated men had lower odds than non-immigrants or Canadian/American-born men (of the same ethnic origin) of reporting cardiovascular disease. The same was true for cancer among women with newly immigrated women reporting cancer significantly less often than their American-born counterparts (Perez 2002, 89).

3. Patterns of health behaviors, specifically smoking and alcohol consumption, differed between immigrant (foreign-born) and American-born individuals and further varied with length of residence in the United States. These behaviors contribute to rates of negative mental health outcomes in immigrants beyond the
singular effects seen by application of the Healthy Migrant Theory (Perez 2002, 89).

Factors Associated with Immigrant Health

To validate and test the Healthy Migrant Theory in the United States, a number of academicians have applied it to their research. James Nazroo (2003), a prominent researcher working in the field of health outcomes and social disparities across racial and ethnic groups, incorporated the theory into his work on mental and physical health inequalities in the United States and United Kingdom. Nazroo asserted that five facets contributed to the health advantages of immigrants:

1. “Entry into a migrant group will be related to both health and human capital, potentially leading to a healthy migrant effect” (Nazroo 2003, 81). Relating this to Perez’s work indicates a self-selection that occurs prior to immigrating: the healthiest individuals immigrate, and the sickly do not. Those who have financial and social resources to immigrate do so, while those who lack money for transportation or lack social connections, complicating the immigration process, often cannot migrate to industrialized nations.

2. Those born and raised in their native country will have had very different childhood experiences; these experiences will be fundamentally different than those of the second generation being raised in the United States. For example, second generation children are more likely to encounter discrimination and to have to navigate two sets of cultural expectations as compared to their first generation parents. These experiences have an impact on physical and mental
health outcomes, potentially due to the actual and perceived addition of acculturation and social health disadvantage. Thus, differences in physical and mental health outcomes across generations are warranted and expected (Nazroo 2003, 81).

3. The migration experience (immigration process) will affect social and economic circumstances and is impacted by the social and economic climate, which might have a direct impact on health, mental or physical (Nazroo 2003, 81). Migration may change the migrants’ relative financial standing from when they resided in their home country as compared to their financial standing in their new country of residence. For example, immigrants may find newfound income in the United States, not available in their home country, especially when migrating from developing nations with high poverty. Additionally, their social standing may shift, perhaps due to the label of being an immigrant or through visible racial markers considered the norm in their country of origin (e.g., skin color). Furthermore, the ability to migrate is constrained by one’s economic strength, social standing, and/or mental well-being. If an individual has a severe mental illness, migration may be challenging, if not impossible. These barriers to migration, these selection biases, may serve as protective factors against developing negative mental health outcomes after migration, because is it assumed those who migrate have better mental health to begin with.

4. Return migration occurs when an immigrant returns to his or her home country. “Return migration might have a significant impact on the apparent relationship between age and ethnic inequalities in health, with entry into a return migrant
group being related to both health and economic capital” (Nazroo 2003, 81). The assertion here it that immigrants who return to their country of birth from the country they migrated to exhibit certain similar characteristics relating to financial standing, health disparities, and age. The weaker and the older return to their home country, perhaps leaving their younger more physically and mentally fit counterparts in the United States.

5. “The contemporary social and economic experiences of first- and second-generation migrants might be quite different, with the second generation more likely to do well economically and to have less traditional ethnic identities” (Nazroo 2003, 81). The second generation, those born in the United States, may have greater wealth and are likely to adopt the norms, values, and beliefs of the majority groups. Rather than see themselves as Hispanic, Afro-Caribbean, or Asian first, they may view their primary ethnic affiliation as American. However, as will be discussed later in this chapter, that loss of ethnic identity may have detrimental effects on mental health, negative mental health outcomes and well-being, in general.

These five assertions are components of the conclusion that discrimination and economic position are important factors in health inequalities, including the manifestation of negative mental health outcomes -- in addition to nativity and immigrant status.

_Application of the Healthy Migrant Theory_

Expanding the preliminary work on the Healthy Migrant Theory, Singh and Miller (2004) found that immigrants had longer life expectancy than their American-born
counterparts. Black immigrants, such as Afro-Caribbeans, had longer life expectancy than American-born Blacks, and most immigrant groups had better overall health outcomes illustrated by lower rates of infant mortality and lower birth weight of babies (as compared to higher rates of overweight newborns) as compared to these same measures in American-born racial minority groups. Singh and Miller found that immigrants’ disability and burden of chronic disease increased with increasing duration of residence in the industrialized world. Furthermore, they found that recent immigrants had significantly lower mortality from various cancers (lung, colorectal, breast, prostate and esophageal cancer), cirrhosis, cardiovascular disease, diabetes, respiratory diseases, and HIV/AIDS (2004, 14). Duration in the United States was linked to worse health outcomes; this will be discussed further in the acculturation section. Furthermore, and most relevant to this exploration, immigrants had lower rates of suicide (Singh and Miller 2004, 14). Although measuring mental health is difficult and even more challenging to do in immigrant groups, due to stigma and different forms of symptom manifestation, suicide may serve as a proxy measure of mental health as it is considered a potential outcome of severe depression (JAMA 2003, 3161). This study (Singh and Miller 2004) is particularly relevant as it shows nativity is tied to a multitude of health outcomes, including suicide.

Measuring mental health outcomes in minority groups historically has been challenging due to stigma related to immigrant/residency status and somatization of symptoms associated with negative mental health outcomes. Somatization is the process by which indications of mental health are transformed into physical symptoms (NIH 2008, P1). For example, an Asian may not say that he feels depressed, but may readily
admit to having stomach pains. Such somatization complicates mental health research with racial and ethnic minorities.

However, in the last decade, researchers have had a level of success in measuring mental health outcomes in racial and ethnic minority groups. Specific to this effort, Alegria et al. (2008) posit that although widely utilized to explain health advantage among Latino populations, contradictory research evidence and findings exist regarding the generalizability of the Healthy Migrant Theory; they also found that when analyzing the Latino population in aggregate (rather than in sub-groups), risk of most mental illnesses (including depression and anxiety) was lower for Latinos than for non-Latino white respondents (2008, 1). Furthermore, consistent with and in support of the Healthy Migrant Theory, U.S.-born Latino respondents reported higher rates of most mental illness, such as depression and anxiety, than foreign-born Latino immigrants (Alegria et al. 2008, 1). They also found that stratifying by Latino sub-group; variances emerged wherein some groups were more likely to exhibit protective factors and lower rates of mental illness than others. When reviewing Alegria et al.’s findings of the aggregate population, support is found for the idea that immigrants had better mental health outcomes than non-immigrants. Additionally, more recent work has emerged which uses the Healthy Migrant Theory to explain behavioral differences believed to be correlated to mental health outcomes such as alcohol consumption and cigarette use (Marsiglia 2011) and residence in disadvantaged neighborhoods, specifically the effects of being a lower income minority parent (Kane 2011).

Earlier support for the HMT is also found. Ortega et al. (2000) analyzed data on immigrants from the early 1980’s to 1995. His team found that when compared side-by-
side controlling for the same measures across sub-groups; Mexican-Americans were less likely to exhibit negative mental health outcomes than non-Hispanic Whites (Ortega et al. 2000, 728). Their next step was to perform a secondary multivariate analysis. Once that was completed another relationship emerged. Ortega et al. found that acculturation measures predicted greater risk of having any mental illness (depression, anxiety, bi-polar, and so on) for those originally from Mexico and ‘other’ Hispanics (2000, 728). Additionally, they found that Puerto Ricans had a greater risk of having a substance abuse disorder as compared to both other Latinos and non-Hispanic whites (Ortega et al. 2000, 728). Their results suggested that an increasing prevalence of negative mental health outcomes, psychiatric disorders, and substance use disorders found in Hispanics may be attributed to increasing levels of acculturation in this group (2000, 728). Ortega et al.’s work (2000) supported the HMT, by emphasizing the relationship between increased acculturation and increased rate of negative mental health outcomes in racial and ethnic minority groups.

Although only a sample of research articles have been covered in this section, the consensus when applying the Healthy Migrant Theory is that ample evidence exists to support the HMT when applied to racial and ethnic minorities residing in the United States (Marsiglia 2011; Ortega et al. 2000; Alegria et al. 2008; Singh and Miller 2004; Markides and Eschbach 2005).

_Return Selection, the Salmon Effect_

Markides and Eschbach (2005) also found support for the HMT when they focused their research agenda on older immigrants. By using the National Community
Surveys linked to the National Death Index, they found that immigrant Hispanics showed a longevity advantage as compared to non-Hispanic Whites, and this advantage was most prominent among older individuals (Markides and Eschbach 2005, 68). The crux of their work suggested that the longevity advantage can be attributed to selective return migration of less healthy immigrants to their home country, which is an extension of the Healthy Migrant Theory. Return selection, also known as the Salmon Effect, suggests that as immigrants’ age and their mental and physical health deteriorates, the most ill of the group will return to their home or native country, leaving the healthiest individuals in the United States (see for example Ullmann et al. 2011; Angel et al. 2008 or Mehrotra et al. 2008).

In contrast to the literature just cited which supports the idea of a salmon effect, return migration of less healthy immigrants to their country of origin, some researchers do not find support of this in their work. Abraído-Lanza et al. (1999) attempted to test the idea that healthy immigrants migrate to the United States and less healthy people or those who deteriorate in health status return home to their country of birth. They found no support for the salmon effect when using the National Longitudinal Mortality Study data (1543). Their work showed that as immigrants’ health status diminished, no change in rate of return occurred. Regardless of whether the Salmon Effect is a valid process, the Healthy Migrant Theory is well supported, and has been applied to immigration research across some racial and ethnic minority groups, especially to Hispanic research as seen throughout this dissertation and research on Asians as described in the subsequent sections. There is no literature applying the Health Migrant Theory to African
Americans/Blacks since they do not have a return migration path, and very little research, comparatively, exists on Afro-Caribbeans in general.

*The Healthy Migrant Theory and Asians*

Although a lot of research has been conducted applying the Healthy Migrant Theory to Hispanic minority groups (Abraído-Lanza et al. 1999; Markides and Eschbach 2005; Perez 2002), the applicability of this theory has been extended to other immigrant groups as well. However, validating the application of the Healthy Migrant Theory is more challenging for Asian sub-groups, because they typically have better physical and mental health outcomes, even in their countries of origin as compared to native born Americans (CIA Factbook 2009). The applicability of the Health Migrant Theory to Asian groups is best seen when comparing American-born Asians to Asian immigrants born in Asia. Research illustrates that immigrant Asians are physically and mentally healthier than American-born Asians. For example, Bates et al (2007) found that generational status – for example first as compared to third generation -- in the United States is associated with an increase in BMI and obesity in Latino and Asian Americans (70). Recently migrated Asians possessed a lower BMI and lower overall rates of obesity, than those who were second or third generation US born (Bates et al. 2007, 71). By this logic, as length of residence in the United States increases, the BMI and weight of Asian Americans increases. This may lead to an increase in prevalence of weight related disorders and secondary outcomes (Renman et al 2001, 998). Unfortunately, very limited research exists on mental health outcomes, nativity, and immigration using the Healthy Migrant Theory with Asian groups.
Limitations of the Healthy Migrant Theory

Perez’s (2002) work laid a foundation for health outcomes research within immigrant communities; however, there are limitations to a blanket application of his theory. First, this theory was formed using Canadian culture and their immigration landscape, not that of the United States. Canada has a different set of migration paths (Citizen and Immigration Canada 2012). Canada’s immigrant pool is different than the United States’ immigrant body. Hispanics are now the United States’ largest minority group, but long-term immigrant residents in Canada are typically more likely to be from European nations, and about half of all newly emigrating immigrants originate from Asia (not Central and Latin America, as seen in the United States) (Perez 2002, 97). Second, the process to legal immigration into Canada is based upon a point system where those who meet certain set criteria (e.g., level of education) automatically qualify for citizenship. The United States has a case-by-case process with numerous tracks tied to a variety of visas (e.g., F1 for foreign students, B1 for visitors, illegal immigration without a visa, etc.). Although both countries claim to have problems with illegal immigration, the United States shares a border with Mexico, a large source of illegal immigrants into the United States. Third, the Canadian health care system is a province-based health-care-for-all system, where regardless of legal residency status; Canadians of all walks of life have access to low-cost health services (Livingston 2001, 351). The United States is the only industrialized nation which still lacks implemented national health insurance (although recent legislature and the recent Supreme Court ruling promise to change that by 2014; however illegal immigrants will still not be covered under the new health care
laws); therefore immigrants, legal and otherwise, do not automatically qualify for health services. Thus, socioeconomic status, specifically income, is a greater predictor of whether an individual or group has access to physical and mental health care in the United States.

Additionally, although researchers using HMT have found great support in research on immigrants in the United States (Markides and Eschbach 2005; Ortega et al. 2000; Alegria 2008), it is important to also note situations where the HMT did not appear applicable. As stated earlier, the HMT is dependent on both individual agency as well as macro-level structural factors, which may include factors such as group systems, government sanctions, and economic climate (Perez 2002; Morales et al. 2007; Scribner 1996). A 2007 study on immigration and mental illness in Sweden found that immigrants residing in Sweden exhibited a higher rate of mental illness (negative mental health outcomes) than native Swedes (Tinghög et al. 2007, 1433). The researchers stated “the findings in this study suggested that the association between immigrant status and mental illness appears above all to be an effect of a higher prevalence of social and economic disadvantage” (Tinghög et al. 2007, 1433). Although a single research study, these findings illustrate that the HMT is not universally applicable. The cultural, social, economic, and political climate of a country, as well as immigration path may impact mental health outcomes.

In addition to the limitations outlined above, there are gaps in the HMT. The first is that it does not address the immigration pathway – legal or illegal. Those who migrate illegally potentially encounter a wider set of challenges. Furthermore, as the socio-political climate in the United States has shifted, as illustrated by states focusing their
attention on strict immigration laws (e.g. HB 56 in Alabama and SB 1070 in Arizona),
the barriers immigrants face have increased, with illegal immigrants (and those who help
them in Alabama) facing jail time and immediate deportation is some cases. Although
President Obama made the following statement a month ago (June 2012), “I am pleased
that the Supreme Court has struck down key provisions of Arizona's immigration law.
What this decision makes unmistakably clear is that Congress must act on comprehensive
immigration reform. A patchwork of state laws is not a solution to our broken
immigration system – it’s part of the problem,” which appeared to support the repeal of
these inflammatory laws, the President did call for comprehensive immigration reform
which has yet to be defined. Finally, the HMT fails to directly account for socioeconomic
factors requiring one to bring in supplemental literature and research to support it.

The Health Migrant Theory as Sociological Theory

Although limitations in a broad sense were addressed in the previous section, the
question remains as to if the HMT can be considered a theory by sociological definitions.
A theory is comprised of propositions which explain how a certain phenomenon affects
another phenomenon, asserting causality. Ritzer defines sociological theory as “…a set of
interrelated ideas that allow for the systematization of knowledge of the social world.
This knowledge is then used to explain the social world and make predictions about the
future of the social world” (2010, 5). Sociological theories can be tested.

Some researchers (Uretsky 2007; Leão 2006; Marmot 1984; Wingate and
Alexander 2006) have used the HMT as a theory as far back as 1984; however, articles
that lay the framework of the HMT as a theory are scarce. Wingate and Alexander (2006)
offer two propositions in their work on pregnancy outcomes of immigrants. The first is that healthier individuals are able to migrate easier and have better health outcomes, simply because they are healthier. This is illustrated by better birth outcomes seen in foreign-born immigrants. Thus, *a selection bias, where healthier individuals migrate easily and unhealthy individuals do not, causes immigrants in the United States to have better health outcomes* (Lechner and Mielck 1998; Rumbaut and Weeks, 1996; Wingate and Alexander 2006). The second, not necessarily applicable to this research project, is that *this selection bias is also applicable to internal migration, leading to better health outcomes of those who migrate within their own country* (Wingate and Alexander 2006, 493). Although Wingate and Alexander’s (2006) work suggests two propositions, with the addition of other research that refers to the HMT, these may actually be segmented into six propositions:

1. Healthier individuals will migrate more often than unhealthy individuals.
2. Immigrants will have better health outcomes than American born individuals regardless of race or ethnicity.
3. The longer an immigrant resides in the United States, the more acculturated he becomes; the more likely he is to having health outcomes similar to the general public.
4. Immigration is related to financial standing; those who emigrate from the developing world may find greater income opportunities in the U.S.
5. Immigration is related to social standing; racial and ethnic minorities who immigrate may encounter a decrease in social standing.
6. A selection (salmon bias) bias exists wherein unhealthier immigrants will return to their country of origin (Ullmann et al. 2011, 421).

Propositions alone do not indicate the existence of a sociological theory. A convenient and plausible model should be present (Besher 1957, 33). This model would include assumptions that are not tested but believed to hold true for this model to function as expected. Models include important factors and any relationships that exist between factors (Besher 1957, 33). The HMT’s model includes the following assumptions:

1. “The healthy migrant theory is premised on the notion that migration is not random” (Ullmann et al. 2011, 421) and is not accessible to anyone who would like to immigrate.
2. Government agencies and policies affect the ability for one to immigrate.
3. There is a financial implication of immigration.
4. Immigrants who are racial or ethnic minorities will have a different migration experience upon arrival in the United States as compared to European immigrants.
5. Illegal immigrants will encounter more socio-political challenges than legal immigrants.
6. Gender informs the immigration experience; women’s health is different than men’s health.

If the HMT has propositions, a model with assumptions, and constructs -- is the HMT a sociological theory? Yes, it meets the basic criteria to be labeled as a sociological
theory, but scant literature exists to systematically define it as such and identify its theoretical components. Unfortunately, the HMT has not been extensively used in the sociological literature on immigrant health outcomes; however, it has been applied in the public health space (Lechner and Mielck 1998; Rumbaut and Weeks, 1996; Wingate and Alexander 2006). Thus, Merton’s view on sociological theory is particularly relevant to this endeavor. “Merton regards research as a process with broader implications for theory than mere hypothesis testing. Any research project, considered in its entirety, may clarify theory, reformulate theory, initiate new theory, or deflect theory entirely, as well as verify theory” (Besher 1957; Merton 1949). The HMT may not be fully formed, defined, or clarified, but this research project seeks to incorporate elements from multiple works to further clarify the HMT as a legitimate sociological theory.

**Summation of the Healthy Migrant Theory**

Regardless of support for the Healthy Migrant Theory and its applicability to minority groups, a question remains. What pre-migration effects and processes lead to the migration of individuals who exhibit better health outcomes above and beyond their nativity? Two perspectives have been identified and appear regularly in the literature. The first suggests that screening by the authorities in the country or origin prior to migrating into the United States identifies and approves individuals with positive habits, resources and behaviors. Then -- through this process -- selects those individuals to migrate whereby the healthiest and wealthiest individuals are allowed to and have the resources to migrate, leaving others who may not be as robust behind (Kennedy et al. 2006, 4). Thus, only the healthiest and wealthiest are allowed to migrate. Those who are
physically well and mentally stable are screened prior to being allowed to leave their country of origin. Individuals who are depressed or have cancer or seem volatile or have a personality disorder may be stopped from immigrating (Kennedy et al. 2006, 4). The second perspective asserts that positive habits and favorable behaviors in an immigrant’s native home country developed prior to migration lead to immigrants who are healthier than the average individual in the country being migrated to, in this case, the United States (Kennedy et al. 2006, 5). Examples may include more physical exercise, like walking to work instead of driving, minimizing stress in one’s life, living in a community focused area, having a lower caloric intake, or eating more fresh fruits and vegetables. Regardless of the reasons, pre-migration immigrants exhibit better health outcomes, both physical and mental, than non-immigrants in the United States (Perez 2002, Morales et al. 2007, Markides and Eschbach 2005, Singh and Miller 2004; Ortega et. al 2000; Alegria et al. 2008).

B. Ethnicity and Mental Health

Although the Healthy Migrant Theory provides a framework by which to examine mental health outcomes of racial or ethnicity of immigrants, it is also important to report outcomes that may be correlated with minority status and impact mental illnesses above and beyond immigration status. A 2007 study by the National Association of State Mental Health Program Directors (NASMHPD) found that individuals with serious mental illnesses died significantly earlier than those without -- on average at 51 years as compared to 76 for Americans overall. This quarter century gap was suggested to be in majority part due to comorbidity of serious medical conditions at a notably higher rate
than found in the general population (CHIP 2007, 2). Those individuals who are mentally ill are: three times more likely to die from cardiovascular disease or from diabetes, almost four times as likely to die from unintended injury, five times as likely to die from respiratory complications/failure, and almost seven times as likely to die from pneumonia or influenza (CHIP 2007, 2). Mental illness is correlated with a variety of outcomes.

Interestingly, immigrants from different countries with similar economic climates exhibit different patterns and rates of mental illness and well-being, in addition to differences in comparison to American-born minorities and Whites. The Centers for Disease Control and Prevention (CDC) suggests that 25% of all Americans will have an identifiable at any given moment with a lifetime prevalence of 50%, diagnosable mental illness with direct costs of care to exceed $300 billion (CDC 2011; CDC 2008). Results from the National Epidemiologic Survey of Alcohol and Related Conditions (NESARC) found that about 13% of respondents will have major depressive disorder at some time in their lives (NIH 2005, P3). A study by Moreno and colleagues (2007) found a forty-fold increase in bipolar disorder diagnoses in children and adolescents in the last decade. The National Institute of Mental Health recently reported that approximately 10% of Americans have a mood disorder, 3% have bipolar disorder, 1% has schizophrenia, 7% have social phobia, and about 7% have generalized anxiety disorder in a given year (NIMH 2008, Online Sections 2-3). The CDC’s U.S. Adult Mental Illness Surveillance Report (2011) reported a stark geographical difference in the rate of depression, with the South having the highest rates of depression - 13.7% in Mississippi and West Virginia as compared to 4.3% in North Dakota. Regardless, the overall prevalence of mental disorders is high.
African Americans/Blacks comprise 13.1% of the population (U.S. Census 2011, T1); some studies suggest that these individuals are more likely to be affected by a mental illness as compared to Whites, and that they are less likely to seek treatment (CDC 2010, P6). The Surgeon General’s Report (2008) suggests a nuanced argument stating that African Americans/Blacks are less likely to become depressed, but are more likely to experience phobias and somatize. Phobias are “anxiety disorders in which the essential feature is persistent and irrational fear of a specific object, activity, or situation that the individual feels compelled to avoid. The individual recognizes the fear as excessive or unreasonable” (NIH 2010, D1), and somatization is “a… condition in which a person has physical symptoms that are caused by psychological problems, and no physical problem can be found” (NIH 2008, P1). Additionally, due to increased poverty, high representation in the homeless population, lack of health insurance, and many other population characteristics, the effects of mental illness manifest themselves differently (e.g., personality disorders as compared to depression) in African Americans/Blacks as compared to Whites. However, many other historic studies do not find differences in mental health outcomes between Blacks and Whites (Dohrenwend and Dohrenwend 1974; Kessler et al. 1994; Grier and Cobbs 1992), creating a research opportunity to not only capture the rate of mental illness in Blacks, but to also measure it against Whites or other racial/ethnic minority groups.

The CDC also notes that Hispanics do not suffer from depression any more or less than Whites (2008, Sections 3-4). Hispanics comprise 16.7% of the population, representing the largest minority group in the U.S. (U.S. Census 2011, T1). Immigration seems to affect mental health via increased stressors (e.g., fear of deportation, lack of
access to government benefits, etc.); however, Mexican immigrants exhibit mental illness less than American-born Mexicans (SAMHSA 2008, P5). Some studies suggest that Hispanic youth experience more anxiety related behaviors and depression than their white peers (SAMHSA 2008, P5). Culturally specific syndromes are found in the Hispanic population such as: susto (fright), nervios (nerves), ataque de nervios (nervous attack or nervous breakdown), and mal de ojo, also known as the evil eye (Stacy 2002; SAMHSA 2008). Presence of these leads to complication in diagnosis, since American trained practitioners may not be familiar with them (Stacy 2002; SAMHSA 2008).

Per the CDC, Asians are afflicted by mental illness significantly less often than Whites (2008, Sections 3-4). Although Asians are reported as least likely to exhibit symptoms of mental illnesses (in the way Americans conceive mental illness – Asians heavily somatize mental health symptoms into physical symptoms), certain sub-groups have particularly high rates of specific diseases, possibly due to exposure to discrimination, acculturation, or immigration stressors (CDC 2008; Kirn 2002). A small survey of Korean immigrants found that about 30% of respondents reported depressive symptoms, and 17% were classified as having major depression (Kirn 2002, 28). Mui and Kang (2006) sampled a group of elderly Asians, including Chinese, Korean, Indian, Filipino, Vietnamese, and Japanese respondents, and found that 40 percent were clinically depressed. An earlier study found the lifetime prevalence rate of depressive disorders in Asians was 12.1%, and 7% for major depression. This same study identifies the one year prevalence at 4.3%, of which over 3% was major depressive disorders (Takeuchi et al. 1998, 1413). Just as in the literature on Blacks and mental illness, there is diversity in findings on mental health and Asians; some studies claim a higher mental
illness rate, which is difficult to capture due to cultural differences, while others support the notion that Asians, overall have better mental health outcomes than other groups (Chen et al. 2002; Kuo 1986; Mui and Kang 2006; Ying 1988). Similar to Hispanics and African Americans/Blacks, there is a cultural context to mental illness within the Asian community (Mui and Kang 2002; SMAHSA 2008); specifically, Asians have a cultural bias against those with depression -- they are viewed as having a personal weakness or being morally unstable (Chen et al. 2002, 239).

All these figures illustrate the diversity in mental health outcomes across racial, ethnic, and cultural groups; however, statistics alone do not offer a full illustration of why the Healthy Migrant Theory is reinforced time and time again, using an array of samples and respondent groups (Spiegel and Yassi 2004, Morales et al. 2007, Scribner 1996). These studies simply highlight these differences.

**C. Discrimination and Well-being**

Interestingly, even though immigrants in the United States often exhibit better mental and physical health outcomes, structural forces, such as discrimination, have been documented which may mitigate the health potential of this health advantage. Discrimination in the United States affects racial and ethnic minority groups regularly (Finch et al. 2000, 297). Discrimination can be defined as “intentional acts that draw unfair or injurious distinctions, that are based solely on ethnic or racial basis and have effects favorable to in-group and negative to out-groups” (Jackson et al. 1998, 110). Discrimination does not happen by accident; rather it is deliberate and leads to defining groups by non-relevant characteristics (Jackson et al. 1998; Finch et al. 2000). Specific to
this research effort, the in-group was defined as White, non-immigrant Americans and the out-group was the population of interest – racial and ethnic minorities, specifically individuals from (or those who self-identify as from) Asia, Latin and Central America, and Blacks regardless of nativity. Discrimination deliberately creates an “us” versus “them” dichotomy, where racial and ethnic minorities are treated differently or viewed differently than the majority group. Discrimination may occur based upon differences in characteristics such as, race, ethnicity, gender, accent, affiliation, neighborhood, and so on, but racism, a form of discrimination, emerges solely from a racial/ethnic difference between the majority group and minority groups.

Racism and discrimination, specifically within the occupations which tend to hire immigrants, migrant workers, and undocumented workers, may result in mental deterioration and physical harm (Holmes 2006; Pumariega et al. 2005; Finch et al. 2000). Upon arriving and settling into the United States, undocumented immigrants may become victims of violent and non-violent crime, overcrowded living situations, poverty, limited social networks, limited social cohesion, prejudice, and discrimination (Pumariega et al. 2005, 584), all of which may lead to a decline in both physical and mental well-being. Holmes offers a slightly different perspective: “Structural racism and anti-immigrant practices determine the poor working conditions, living conditions, and health of migrant workers. Subtle racism serves to reduce awareness of this social context for all involved” (2006, P3). Does structural, macro-level, institutionalized racism and discrimination lead to poor living and working conditions or do the opportunities available to these type of workers increase the discrimination and racism? Regardless of the root, process, or origin, discrimination and racism affect immigrants in the United States (Holmes 2006;
Research by Karlsen and Nazroo (2002) finds that when discrimination appears, regardless of the origin (e.g., though institutional discrimination or socioeconomic disadvantage) negative effects on both physical and mental health follow (624). Discrimination and racism have well documented consequences on mental health; some examples include increased rates of depression, increased stress levels, and generalized anxiety (Szalacha et al. 2003; Pumariega et al. 2005; Finch et al. 2000).

Acculturation, the process of becoming more similar to the majority group/culture, becomes essential in the discrimination and health outcomes interaction (Finch et al. 2000, 295). Discrimination was found to be related directly to depression (Finch et al. 2000, 295). However, this effect had intervening aspects -- it was moderated through a group’s nativity or country of residence, one’s ability to communicate in the English language (an acculturation measure), sex, and education (Finch et al. 2000, 295), leading to more support for the interaction of the two forces upon one another to impact health outcomes. Discrimination does not always occur independently, and can occur in combination with degree of acculturation which may act as a protective or degenerative effect, depending on nativity (Finch et al. 2000; Holmes 2006). However, discrimination remains influential throughout academic exploration of race, ethnicity, and health (Finch et al. 2000; Holmes 2006; Szalacha et al. 2003; Pumariega et al. 2005). Other measures, such as country of origin, acculturation, and sex, add to the complex relationship found between immigrant status and mental health.

Finch et al. (2000) offer a more complicated framework, wherein discrimination and immigration do not act exclusively upon one another independent of other forces,
“While more highly acculturated immigrant respondents were more likely to experience discrimination than their less acculturated counterparts, more highly acculturated U.S. born respondents were less likely to experience discrimination” (295). Basically, if an individual has a high level of acculturation but is foreign-born he/she is more likely to face discrimination; racial and ethnic minorities who are born in the United States and have high levels of acculturation typically do not face discrimination at the same rate -- they are discriminated against less (Finch et al. 2000, 295), or their perception is of less discrimination.

D. Acculturation

The “Memorandum for the Study of Acculturation,” defines acculturation as a process which occurs as different cultural groups come into continuous contact with one another and subsequently change their original group behaviors, norms, values, and beliefs; both groups may be affected or simply one group may change. Acculturation is different than assimilation; assimilation is but one phase of acculturation, and is narrower in its outcomes (Redfield et al. 1936, 149-150). Acculturation is an umbrella process within which sub-processes, such as English-language adoption, occur (Finch et al. 2000; Redfield et al. 1936).

Some researchers offer support for the notion that acculturation improves a minority’s mental health status (such as Lara et al. 2005), while others argue the opposite (see for example Ortega et al. 2000 or Mossakowski 2003). An example of the frustration faced by researchers in attempting to understand acculturation and its effects can be seen
in the work of Landrine and Klonoff (2005), two European researchers who have attempted to theoretically understand the function of acculturation. They state:

“Data on acculturation and ethnic-minority health indicate that acculturation has opposite effects on the same health behavior among different ethnic groups; opposite effects on different health behaviors within an ethnic group; opposite effects on the same health behavior for the women vs. the men of most ethnic groups; and no effect whatsoever on some health behaviors for some ethnic groups. This evidence is so incoherent that it is unintelligible, and hence it continues to be largely useless to health psychology and behavioral medicine” (527).

What is evident is that acculturation appears to have an effect on mental health and well-being for immigrants and racial/ethnic minorities regardless of ethnic background, and that studies such as Landrine and Klonoff’s work attempt to apply acculturation to matters of health too broadly rather than simply focusing on mental health and minorities (Landrine and Klonoff 2005; Lara et al. 2005; Cohen 1972; Mossakowski 2003). For example, Ortega et al. (2000) found that Mexican immigrants residing in the United States were less likely to have a DSM-III-R psychiatric disorder (in concordance with the Healthy Migrant Theory) and that even after multivariate adjustment; acculturation was the greatest predictive factor of mental illness in this ethnic minority group (728). The more acculturated a group was, the more likely they were to perceive discrimination, and the more likely they were to report having a mental illness (Ortega et al. 2000, 728).

Likewise, Mossakowski (2003) links assimilation, acculturation, identity and mental health outcomes for Asians in America. They found that the strength of identification with a racial or ethnic group is directly correlated with fewer symptoms of
depression and better mental health indicators (318). The less acculturated and the more involved one is with a cultural group, the stronger the sense of cultural identity and pride this individual holds, and ultimately the less depression emerges in this group of individuals (Mossakowski 2003, 331). This is indirectly supported by some biological researchers who find that “immigrants' risks of smoking, obesity, hypertension, and chronic condition, although substantially lower than those for the US-born, increased with increasing length of US residence” (Singh and Siahpuch 2002, 83); as immigrants reside in the United States and become more acculturated, their negative health behaviors increase (Singh and Siahpuch 2002, 83).

The debate ensues about acculturation as a valid measure and the assumptions surrounding its usage. In addition to the work of Landrine and Klonoff (2005), Hunt et al. (2004) questioned, whether ‘acculturation’ should be a health research variable. They assert that acculturation research lacks depth and understanding about the assumptions made and the way key concepts are defined. They question if the definition and measurement of culture as a whole is appropriate, which indicators relate to one’s ethnicity or cultural identity as compared to mainstream identity, and what adaptation to culture -- through acculturation – occurs and how does one define it (2004, 973). They conclude that “…acculturation as a variable in health research may be based more on ethnic stereotyping than on objective representations of cultural difference” (Hunt et al. 2004, 973). Taking into consideration the vast utilization of acculturation in social science and public health research on minorities, this project will attempt to integrate acculturation measures based upon respondent’s opinions and thoughts rather than applying any preconceived, potentially biased, parameters to the research design.
E. Mental Health among Ethnic Groups: Gender

In addition to basic measures such as acculturation, discrimination, and ethnicity found in the immigrant mental health and illness literature, other factors which are well-documented in the general body of mental health research need to be explored in the context of immigrant mental health. For example, discrimination is viewed as a structural element (Holmes 2006, Pumariega et al. 2005), acculturation is more of an individual-based agency-focused aspect (Redfield et al. 1936, 150), and sex and gender relate to both structure and agency; gender is more structurally defined through the process of socialization, while sex is a biological, individual trait (Schur 1984, 81).

Basic statistics sometimes can be used to illustrate a point without the need for an extensive, belabored narrative. The correlation between gender and mental health is one of these circumstances; the statistics from the Centers for Disease Control and Prevention (2009) highlight this relationship. Young females were more likely as compared to young males to entertain committing suicide or actually attempt suicide. In contrast, in 2002 adolescent males, aged 15–19 years, were significantly more likely (five times) to die from suicide as were their female counterparts; this disparity can be partially explained by males’ choice in suicidal method, typically leveraging more lethal methods (e.g. the use of firearms) (CDC 2009, Section ISII, P1). Other statistics from the Centers for Disease Control and Prevention show that: 1. More racial and ethnic minority women have experienced serious psychological distress within the past 30 days, than their white counterparts; 2. Within any two week period, about 5% of American adults experienced depression, and depression rates were higher in women; 3. Postpartum depression (PPD) is found in 10-15% of new mothers within the first year post-natal, and the prevalence of
self-reported postpartum depression ranged from about 12-20% depending on the state of residence (CDC 2008, P1); and finally, 4. Over ten years spanning the 1990’s, the hospitalization rate for depression increased close to 81 percent for females aged 5-19 years (27.8 per 100,000 population). This rate for young females was nearly twice that for males of the same age during the same time period, illustrating a direct correlation between gender and prevalence of depression (CDC 2009, P1-P6).

Men are not immune from mental illness; however, they tend to exhibit different manifestations. For example, women are more likely than men to develop an eating disorder, with males comprising only 5 to 15 percent of persons with anorexia or bulimia and 35 percent of individuals with binge-eating disorder (Andersen 1995; Spitzer et al. 1993). Additionally, the highest rates of suicide in the United States are found in older white men, specifically those over age 85 (Kochanek 2004, 25); furthermore, suicide kills four times as many men as compared to women. Women attempt suicide more often (two to three times) than men (Weissman 1999, 16). Schizophrenia, a rare but potentially debilitating mental illness, seems to affect men and women almost equally, but manifests itself at different points of the life course for men and women – in the teen years and early twenties for men, and in the late twenties to early thirties for women (Robins 1991). Finally, autism is much more common in boys than girls (about four times as common). Although fewer in number, girls with autism tend to have greater cognitive impairment and more severe symptoms than boys with autism (Yeargin-Allsopp 2003, 53). It is clear that gender is linked not only to the prevalence, severity, and type of mental illness, but also to the time of initial onset, particularly in cases of depression, anxiety, and
psychological distress. To date, the effects of potential interrelationships of gender, race, ethnicity, and immigration status on mental health have not been explored.

Ethnic minority women, specifically Asian, Hispanic, and Afro-Caribbean, have a different cultural context than native, White, American women, specifically in reference to different belief systems and norms (Stacy 2002; SAMHSA 2008). To understand the challenges faced in accessing health care and mental health services Bauer et al. (2000) undertook a qualitative, explorative initiative in which ethnic minority women who had suffered partner violence were recruited to speak about their challenges in accessing services relating to mental and physical health care. The results identified two types of barriers: sociopolitical and sociocultural, of which sociopolitical barriers were more salient to the difficulty in accessing mental health care and services. Sociopolitical barriers specific to this research work included language barriers, social isolation, discrimination, and fears of deportation (Bauer et al. 2000, 33). These barriers are important to the discussion of mental illness and gender, because ethnic women face these same barriers when needing treatment of mental health outcomes like depression or anxiety. Immigrant women, particularly Hispanic and Asian, are not only a minority within a minority; they are also further limited by their legal and social standing within American society.

Studies examining barriers to mental health services by immigrant women have found similar findings to the above studies, even for women who were not in a violent home. Shame and stigma act as dividers between practitioners and needy patients (Tabora and Flaskerud 2000; Meadows et al. 2001). Interestingly, one study defines the way that immigrant women see their health: women were more holistic as to how they defined
their own health, and they defined their personal as physical health which included their ability to function but did not necessarily include their mental health (Meadows et al. 2001, 1451). Functionality appears to work against seeking treatment for mental illness unless it becomes debilitating. “This functionality was closely related to women's roles as resources for their families’ well-being…Women are unlikely to talk about non-physical aspects of health unless asked about the general context of their lives” (Meadows 2004, 1451). Immigrant women may fear the stigma associated with mental illness, decreasing the likelihood of seeking treatment, and potentially inflating the rate of untreated mental illness in these communities. Additionally, immigration – in and of itself - should be acknowledged as a determinant of mental health (Meadows et al. 2001, 1451).

Women are assumed to be disadvantaged in health, earnings, and other aspects linked to society as a whole. Per the research, minority women will be further disadvantaged, bound by cultural expectations (which are rarely fully understood; see acculturation section), possible lack of language capabilities, fear of government persecution, and a host of additional influences not readily known to non-minority women (Meadows 2004; Tabora and Flasketud 2000; Bauer et al. 2000; Andersen 1995; Spitzer et al. 1993; CDC 2009).

**F. Mental Health and Age**

Being a woman is not the only sociodemographic factor highly correlated with mental health. Age, specifically age of onset and prevalence by age, are also important factors (Kessler et al. 2005; CDC 2008).
Identifying the average age of immigrants to the United States is challenging, due to sensitivity and accuracy of the data, because individuals immigrating illegally create no documentation upon entry. However, age related data about the onset of mental health problems is widely available. The National Comorbidity Survey results show that the onset of mental illness (major depressive disorder as well as all mood disorders) was most likely to appear in the ages of 30-44, and anxiety disorders (panic attacks or phobias) were also most likely to appear between 30-44 years of age. Impulse control disorders (like defiance of conduct illnesses) appeared in the 18-29 range, and problem substance use typically emerged in the 30-44 span (Kessler et al. 2005, 596). Median age of onset for anxiety or impulse-control disorders was eleven years; in contrast, the median age of onset for substance use was twenty years and thirty years for mood disorders (Kessler et al. 2005, 593). Half of all lifetime mental illnesses are evident by age fourteen and about 75% by 24 years of age (Kessler et al. 2005, 593). Overall, it appears that mental illness will manifest prior to age 45 (Kessler et al. 2005; CDC 2008). The link between age, ethnicity, and mental illness has not been documented, perhaps due to the unavailability of age data for immigrants.

G. Socioeconomic Status

Sociologists have acknowledged the role of gender and age in determining a number of outcomes, including mental illness. The role of education and income in the occurrence of mental illness has been defined to even greater lengths, with just as long, if not longer historical context and lineage; Marx’s seminal works were based upon the notion of class or “haves and have-nots” (Marx 1926). Traditionally, classification of
socioeconomic status has been operationalized using three a combination of three measures: income, education, and occupational status (Wright and Perrone 1977, 32-33).

In American research, socioeconomic status is occasionally defined by the combination of education and income, omitting occupational prestige. Socioeconomic status has been summarized by Adler et al.’s work (2002) “Throughout history, socioeconomic status [education and income] has been linked to health. Individuals higher in the social hierarchy typically enjoy better health…SES differences are found for rates of mortality and morbidity from almost every disease and condition” (1095). Those with better health outcomes, as a group, usually have higher levels of education and higher levels of income – additionally, those with higher levels of education have higher levels of income (Antonovsky 1967; Illsley and Baker 1991). Specific to mental health, Cockerham (2006) found that groups with lower education and income had the highest rates of mental disorders (141).

Interestingly, some research in public health has shown that although education and income are related to health, they may not have a major impact on all diseases. For example Kington and Smith found that although socioeconomic status accounted for a large impact on physical, functional outcomes related to chronic diseases, its impact on acute diseases was less. Additionally, socioeconomic status had a relatively small impact in explaining differences in prevalence of specific chronic diseases (Kington and Smith 1997, 805). While the degree of the effect and the identification of which outcomes are altered may be debated, there is little evidence suggesting that education and income do not influence health outcomes, both physical and mental.
What is of interest, relevant particularly to this work, is the relationship between minority status, immigrant status, education, and income. Not surprisingly, clues can be found in epidemiology,

“…analysis revealed that those in the lowest SES quartiles had threefold greater risk of death than those in the highest quartiles among both United States-born Mexican Americans and non-Hispanic Whites. These data suggest that lower SES is strongly associated with increased mortality. After adjustment for SES, mortality rates were similar for United States-born Mexican Americans and non-Hispanic Whites. Foreign-born Mexican Americans had the lowest mortality rates of the three groups” (San Antonio Heart Study 1996, 308).

Education and income were found to attenuate the effect of immigrant status, but an effect still remained intact, with foreign-born (immigrants) exhibiting the lowest mortality of all groups surveyed (San Antonio Heart Study 1996, 307).

This attenuation from education and income found for mortality persists when examining mental illness. The Hispanic Health and Nutrition Examination Survey (HHANES), sponsored by the National Institute of Mental Health, contains measures of depressive symptoms, including the Center for Epidemiologic Studies Depression Scale (CES-D) which can be compared against the general population. Additionally, to ensure that a vast range of respondents was captured, representative of the diversity of Hispanic immigrants, including recent migrants, the survey was administered in Spanish and English. The depression or depressive symptoms rate was about 13%. Factors correlated with increased risk of depressive symptoms were being female (sex), lower educational attainment, lower income, and being American-born in combination with having a high degree of acculturation (White, American). There were no significant differences by
language (Moscicki et al. 1989, 359). Immigrants were mentally healthier than non-immigrants; however, education and income moderated the outcomes in the study.

Education and income are major determinants of disparities (related to race and ethnicity) in physical health and mental health; many other factors, including, but not limited to, geographic location, medical care, migration, racism, acculturation, access to resources, and levels of stress also contribute to health outcomes (Williams 2002, 589). Williams’ statement is in respect to Black Americans, regardless of immigration status. Furthermore, Franks et al. find that having a lower socioeconomic status and/or being a racial minority are associated with worse overall health status and higher rates of mortality (2003, 2505). Interestingly, when dissecting group by group and immigrant versus non-immigrant, these researchers cite that black immigrants hold the lowest mortality of any immigrant group when adjusted for education, income, and occupational status (Franks et al. 2003, 2510). Being black and being an immigrant seems to have an attenuating effect.

Singh and Siahpuch (2002), two biological researchers, suggest that education and income are secondary to minority status or immigration status in terms of effect upon health and mortality. “Compared with US-born Whites of equivalent socioeconomic and demographic background, foreign-born Blacks, Hispanics, and Asians/Pacific Islanders (APIs), US-born APIs, US-born Hispanics, and foreign-born Whites had, respectively, 48%, 45%, 43%, 32%, 26%, and 16% lower mortality risks” (2002, 107). Additionally, American-born Blacks had a significantly higher mortality risk than other US-born groups or immigrant minority groups (Singh and Siahpuch 2002, 83). The only caveat is that native Asians (those born in Asia and have migrated to the United States) seem to
have better health outcomes than all other groups, including American-born Whites (CIA Factbook 2009; Bates et al. 2007; CDC 2008; Kirn 2002). Asians as a group are an anomaly as compared to other racial and ethnic minorities.

In summary, socioeconomic status, specifically education and income, is pivotal in determining health. Some may equate race, ethnicity, education, and income as proxies for one another due to their correlations, but others identify each effect separately. For example, LaVeist found that even though socioeconomic status and race were correlated, both variables were independent predictors of physical and mental health (LaVeist 2005, 31). Education and income affect health outcomes as do race and ethnicity. Education and income have a direct effect on the mental health of racial and ethnic minorities, immigrants or otherwise – the higher a group’s education or income, the better the group’s health (mental and/or physical) (LaVeist 2005; Williams 2002; Moscicki et al. 1989).

**H. Health Lifestyles Theory: Smoking and Drinking**

The review of the Healthy Migrant Theory, measures used to support this theory, and secondary measures used regularly in sociological inquiry (e.g. education and income) show limitations in discussing immigrant mental health. As previously noted, the Healthy Migrant Theory is widely accepted, but limited in its explanatory power without the inclusion of other measures or theories (Tinghög et al. 2007; Perez 2002); thus the inclusion of Cockerham’s Health Lifestyles Theory (2005).

Lifestyle is a broad term which may encompass a wide range of group behaviors, circumstances, dispositions, practices, and experiences. For this paper, *health lifestyle*
will be defined, and then evaluated in combination of race, ethnicity, and behaviors – specifically smoking and alcohol consumption.

Health lifestyles are “collective patterns of health-related behavior based on choices from options available to people according to their life chances” (Cockerham 2000, 1314). Life choices and life chances are concepts built into Weber’s all-encompassing notion of lifestyle (1922, 531-539). Life choices are decisions made based upon circumstance, ability, and experiences, thus life choices are manifestation of agency. Conversely, life chances emerge from structure. Life chances are representative of social class and can constrain or enable behavior, existing above and beyond the individual (Cockerham 2005; Giddens 1984). In sum, lifestyles, specifically health lifestyles, are repercussions of expression of agency and structural forces. Combining the choices and chances into a cohesive theory highlights the impact of structure over agency in emphasizing group behavior and outcomes; lifestyle is not an individual focused construct.

This theory begins with the identification of group characteristics. What are the circumstances of this group? Are they poor, educated, risk-averse, etc.? The emphasis then shifts to socialization, the process by which group norms, values, and expectations are internalized by individuals – transforming an individual into a member of the society or group. Socialization continues throughout an individual’s life. Primary socialization occurs early in childhood through exposure to significant others, whereas secondary socialization continues throughout life by the influence of others; (Schur 1984). Additionally, group characteristics connect with life chances (briefly explained earlier). Although separate constructs, the distinction between chances and characteristics is
somewhat blurred; however, the relationship may be summarized by saying that group characteristics define a group’s life chances.

Just as group characteristics are linked to life chances, socialization and one’s experiences relate to life choices, because life choices are an expression of agency. The socialization process instills a framework upon the individual which magnifies and hones tastes, preferences, thoughts, beliefs, values, etc.

The next relationship is the link of life choices and life chances. Imagine a scale with agency on one side and structure on the other – equilibrium is not the goal, rather these two entities see-saw back and forth in different situations, where overall, structure is the heavier partner.

The end result of socialization, life choices, group characteristics, and life chances has been conceptualized by Bourdieu as *habitus*. *Habitus* is

“…a system of durable, transposable dispositions, structured structures predisposed to function as structuring structures, that is, as principles which generate and organize practices and representations that can be objectively adapted to their outcomes without presupposing a conscious aiming at ends or an express mastery of the operations necessary in order to attain them (Bourdieu 1990, 53).

Thus, habitus represents a group’s persona, preferences, and dispositions as a result of structural influences and agency driven processes. *Habitus* is a precursor to action and expresses itself (formation) through experiences. Additionally, Gibson’s Affordance Theory compliments Bourdieu’s conceptualization of habitus. His notion of affordances suggests how environment would guide but not determine practice then subsequently connect this practice with perception and beliefs (e.g. internalization of discrimination).
Furthermore, Gibson felt that what one sees (e.g. ethnicity) is not the qualities of an item or individual, but their affordances (Gibson 1986).

The next step in this framework is individual practices or action. At the point of action, behavior is illuminated. This point is where alcohol use and drug use emerge, not before; ergo the need to define the entire process and understand the influences leading to behavior. From practices emerge health lifestyles, philosophies of the group about health. Health lifestyles and habitus reconnect into a feedback loop with each affecting the other. As habitus evolves through structure and agency so do health lifestyles.

This brief explanation provides the framework to demonstrate that behaviors such as drinking and smoking are not necessarily individual choices, but reflect a group mindset or philosophy built both through structural influences and individual decisions. There is a group dimension to smoking, drinking, and other deleterious as well as beneficial behaviors. This is particularly salient to this investigation of mental health among immigrants, because, as discussed previously, racial and ethnic minorities come to the United States both as products of and carriers of their own culture. This cultural framework with associated norms, values, and beliefs may impact a groups’ participation in unhealthy lifestyles, such as smoking or alcohol consumption, and the rate at which these behaviors occur.

Cigarette Smoking Behavior and Race/Ethnicity

This spotlight on smoking and alcohol consumption is central to this paper, because these behaviors have been shown to correlate with mental illness (NIMH 2009; Arehart-Treichel 2003). The group dimension to smoking and drinking becomes clearer
because of the difference in rates of smoking across racial and ethnic groups; these rates, in turn, would impact mental health outcomes based on the documented correlation between smoking or alcohol consumption and negative mental health outcomes (NIMH 2009; CDC 2006; Arehart-Treichel 2003). Furthermore, a recent study, which leveraged the Healthy Migrant Theory, found that young Mexicans who had the intention of emigrating to the United States had a lower rate of alcohol and cigarette usage as compared to those who intended to stay in their native country, signaling and offering support for the idea that the healthiest migrant (Marsiglia et al. 2011, 1626).

Specifically, Hispanics typically have reported lower rates of cigarette smoking as compared to other racial/ethnic groups (e.g. Blacks) with an exception for the comparison to Asians residing in the United States. In 2006, over 15% of Hispanics smoked compared to around 10% of Asians, ~23% of non-Hispanic Blacks, 22% of non-Hispanic Whites and 32% of American Indians (CDC 2006). Hispanic women smoked significantly less than females of other races and Hispanic men. In 2006, almost 20% of Hispanic men smoked, which was about double the rate found in Hispanic women for the same time period. “The percentage of Hispanic high school students that smoke increased 34 percent from 1991 to 1997. However, between 1997 and 2005, the smoking rate has declined 51 percent from 34 percent to 16.7 percent” (MMWR 2006, P2).

In contrast, 2008 CDC analysis shows that 21% of Americans in general (2006) smoked and that about 20% of high school students smoked in the last thirty days (2007). Table sixty-five, from Health U.S. (2008) lists smoking trends from 1990-1992, 1995-1989, and from 2004-2006 for men and women; 23.3% of men and 18.4% of women smoked in 2004-2006. Classifying along racial/ethnicity categories, the CDC reported
(2002-2004) that 23.3% of White men, 19.1% of White women, 25.2% of Black men, 17.5% of Black women, 31.5% of American Indian or Alaskan Native men, 23.2% of American Indian or Alaskan Native women, 18.1% of Asian men, 5.2% of Asian women, 19.0% of Hispanic men, and 10.5% of Hispanic women smoked (CDC 2008, T65). The CDC found evidence to suggest that the prevalence of smoking is decreasing among all gender and racial/ethnic groups (CDC 2008, T65).

As mentioned earlier, cigarette smoking is essential to understanding mental health outcomes in racial and ethnic minorities, because this behavior has been known to correlate with mental illness in the general population (NIMH 2009; Arehert-Treichel 2003).

“An analysis of data from the National Comorbidity Study, a nationally representative survey of psychiatric disorders in the United States, found that 41 percent of people with a psychiatric disorder smoke, about twice the rate (22.5 percent) seen in those without psychiatric diagnoses. People with psychiatric disorders consume 44.3 percent of all cigarettes smoked in this country. The high rate of smoking is an important factor in increased rates of physical illness and mortality in this group” (NIMH 2009, P2)

Additionally, “Heavy smokers are often plagued not just by poor physical health, but by poor mental health. Whether heavy smoking leads to poor mental health or poor mental health leads to heavy smoking, however, is unclear (Arehart-Treichel 2003, 34).

Arehart-Treichel (2003) found that heavy smokers experienced poorer mental health and greater mental illness than nonsmokers (p. 35). She also found that more than half of smokers reported at least one mental disorder during the prior year, as compared with one fourth of non-smokers (Arehart-Treichel 2003, 34). Anxiety disorders were over twice as common in dependent/addicted smokers as compared to nonsmokers and non-dependent
smokers; 28% in contrast to 12% and 14%, respectively. Depression was twice as likely to be reported among the dependent/addicted smokers as among the other groups – 4%, 11%, and 11%, respectively (Arehart-Treichel 2003, 34).

Alcohol Consumption and Mental Illness

Data on mental illness and substance use or abuse is limited. However, statistics from the National Alliance on Mental Illness (NAMI) provide perspective; 37% of alcohol abusers had a mental illness and among individuals who had a current mental illness diagnosis, 29% abused either drugs, alcohol, or both (NAMI 2009, P3).

Health US (2008), published by the Centers for Disease Control and Prevention (CDC), offers insight on alcohol consumption by racial/ethnic group in the United States. In 2006 (published in 2008), 60.8% of American adults claimed to consume alcohol; 63.8% of Whites, 48.5% of Blacks, 52.8% of American Indian or Alaskan Native, 43.0% of Asians, and 50.5% of Hispanics (CDC 2008, T68). A follow-up report published in 2010 found that the overall rate of alcohol consumption rose to 79.3%: 81.9% of Whites, 70.5% of Blacks, 71.5% of American Indian or Alaskan Native, 58.6% of Asians, and 68.4% of Hispanics (CDC 2012, 193). The general trend remained steady from 2008 to 2010, with Whites being the highest consumers of alcohol. Additionally, the following percentages reflect the rate of heavy drinkers – consuming five or more alcoholic beverages a day – in the United States: 5.0% of the general public, 5.4% of Whites, 3.5% of Blacks, 1.3% of Asians, and 2.8% of Hispanics (CDC 2008, T69). Heavy drinking in the general public seems to be on the rise (CDC 2012; CDC 2008). There are also
differences by gender, 5.5% of males and 4.5% of females claim to be heavy drinkers (CDC 2008, T69).

Alcohol use has been shown to link to specific mental illnesses. For example, McCreadie (2002) found an overabundance of alcohol use in those with diagnosed schizophrenia – almost twice the rate as those without schizophrenia (McCreadie 2002, 323). In the case of schizophrenia, a debilitating mental illness, the question arises as to if alcohol consumption is used to fight the effects of the disease. Phillips and Johnson assert that

“There is some evidence to support the idea that people with schizophrenia and other psychotic disorders use substances to reduce general dysphoria, and possibly negative symptoms [associated with the mental illness]. Social environment and experiences are also likely to be factors in the development of substance misuse in this group, but there is a dearth of empirical evidence (2001, 274).

In terms of major depressive disorder, alcoholism is a key indicator; an abundance of literature illustrates the positive correlation between the two. Alcohol consumption or in extreme cases alcohol abuse, and depression are linked and are found to frequently occur together (Gilman and Abraham 2001; Nunes and Levin 2004; Sullivan et al 2004).

The anxiety and alcohol relationship is best summarized by Kushner et al.’s work. Generally, researchers agree that problems related to anxiety and alcohol consumption, specifically alcohol abuse, routinely occur within the same individuals, but that the cause and pathway of this association is both controversial and not fully understood (2000, 149). Three major perspectives are that: 1. anxiety disorder promotes alcohol consumption; 2. pathological alcohol consumption promotes anxiety illnesses, and 3. that
a third factor may promote both conditions, independent of each other (Kushner et al. 2000, 149). Although it has been established that alcohol consumption is correlated with mental illness (Kushner et al. 2000; Gilman and Abraham 2001; Nunes and Levin 2004; Sullivan et al 2004), the causal ordering is unclear.

Other Health Behaviors

Although this research project focuses specifically on cigarette smoking and alcohol consumption, there are other health behaviors that may have an impact on mental health such as overeating and rate of physical activity. Overeating has been documented to be correlated with depression and anxiety; however, there appears to be difference in opinion as to if overeating leads to negative mental health outcomes, depression or anxiety trigger overeating, or both (Goossens et al. 2009; Heiskanen et al. 2006; Fichter et al. 1993). Regardless, both are interrelated and relevant to each other’s outcomes. As to physical activity or routine exercise, the literature is clear and consistent. Routine physical activity improves certain mental health outcomes, particularly in the case of depression (Martinsen 1990; Lawlor 2001). Eating patterns and exercise are important health lifestyle behaviors in relation to mental health outcomes; however, robust measures are not always available for inclusion in such a project.

I. Neighborhood

In addition to the previously addressed concepts which affect mental health outcomes, neighborhood characteristics also impact these outcomes. Ross (2000) found that those residing in poorer neighborhoods, especially those areas with a high rate of
mother only households exhibited higher rates of depression (177). These poor
neighborhoods are stressful environments, not only because of the poverty, but because
of the secondary factors associated with poor neighborhoods – high crime rates,
vandalism, drug accessibility, improper trash disposal, and so on (Kane 2011; Ross 2000;
Roosa et al. 2009). Furthermore, immigrants are not spared the negative effects of the
neighborhoods in which they reside; however, the effects appear to be more complicated.
For example, Mexicans that live in a poorer neighborhood that is primarily inhabited by
other Mexican families do not exhibit a high rate of negative mental health outcomes;
conversely, Mexican families that live in a predominantly middle class neighborhood that
is not dominated by other Mexican families appear to have worse mental health outcomes
(Roosa et al. 2009, 15). Thus, although neighborhood characteristics affect mental health
outcomes – poorer more crime ridden areas result in higher rates of depression, this effect
is heavily dependent on the racial/ethnic composition of the neighborhood (Ross 2000,
Roosa et al. 2009).

J. Summary

In this chapter, a single theoretical perspective has been set forth as the foundation
of this work – the Healthy Migrant Theory, which asserts that immigrants are healthier
than their American-born counterparts. Various pathways have been suggested as
responsible for this effect, ranging from immigrant screening, the salmon effect, to the
notion that favorable behaviors and habits formed in one’s home (native) country prior to
migrating to the United States lead to relatively healthier immigrants (Kennedy et al.
2006, 5).
Previously identified constructs of mental health outcomes and prevalence have been reviewed as well. These factors include: discrimination, nativity, ethnicity or race, acculturation, gender, education, income, and age. Cockerham’s Health Lifestyles Theory (2000, 2005) is included as a supplement to the Healthy Migrant Theory, and therefore behaviors such as alcohol consumption and cigarette (?) smoking are also included.

Some factors have been shown to be positively correlated with mental health while others have a negative relationship, creating a potentially complicated analysis, in which the impact of one factor is attenuated by the inclusion of another. Overlaying these measures, discrimination, acculturation, gender, income, education, race, neighborhood, etc., upon the identified and discussed theories allows for in-depth analysis of mental illness, specifically major depressive disorder (commonly referred to as depression) and anxiety disorder, in immigrant (Hispanics, Blacks – native and immigrant, Asians) and American non-immigrant populations.

J. Hypotheses

Based on a review of the literature and theoretical perspectives, hypotheses have been formulated. Comparison groups have been built into each hypothesis. For example, for hypotheses that relate to ethnicity, the primary comparison group is whites whereas the comparison group for hypotheses built around immigrant status is typically non-immigrants. Thus, the following hypotheses (listed general to more specific) related to mental illness and race/ethnicity have been posited:

Hypothesis 1: Regardless of race or ethnicity, women will have higher odds of having worse mental health, specifically depression and anxiety, than men.
Hypothesis 2: Age will be correlated with rate of mental illness. Specifically, those younger than 50 will have higher odds of having a mental illness than those fifty and older.

Hypothesis 3: Regardless of race or ethnicity, socioeconomic status will be correlated with rate of mental illness.
   a. Those with lower levels of education will have higher odds of suffering from depression or anxiety.
   b. Those with lower levels of income will have higher odds of suffering from depression or anxiety.

Hypothesis 4: Excessive alcohol consumption will be correlated with an increase in negative mental health outcomes. Those who abuse alcohol will have higher odds of having depression or anxiety.

Hypothesis 5: Smoking will be correlated with an increase in negative mental health outcomes. Those who smoke will have higher odds of having depression or anxiety.

Hypothesis 6: Ethnicity will be correlated with rate of mental illness (depression and anxiety individually)
a. American-born Blacks will be diagnosed as having depression more frequently than American-born Whites.

b. American-born Blacks will be diagnosed as having anxiety more frequently than American-born Whites.

c. Asians will be less likely than American-born whites to have a diagnosis of depression.

d. There will be no differences in diagnoses of depression and/or anxiety between Hispanics and Whites.

Hypothesis 7: All immigrant groups will exhibit better mental health than their non-immigrant counterpart group.

a. Immigrants will have lower odds of being diagnosed as having a mental illness than those of the same ethnicity born in the United States.

b. Asian immigrants will be the least likely group to be diagnosed with a mental illness.

Hypothesis 8: Acculturation will be correlated with diagnosis of mental illness. Those who exhibit higher rates of acculturation will have higher odds of being diagnosed as having mental illness.

Hypothesis 9: Discrimination will be correlated with diagnosis of mental illness. Those who encounter discrimination will have higher odds of being diagnosed with a mental illness.
Methodology, process, and data related information relevant to these hypotheses are discussed in the following section.
CHAPTER THREE

RESEARCH METHODS

A. Description of Data Set and Data Collection Agencies

The Collaborative Psychiatric Epidemiology Surveys (CPES), sponsored by the National Institute of Mental Health, is a repository of data with a special focus on race and ethnicity and mental health and illness. The CPES is a result of collaboratively developing and implementing three nationally representative surveys, each focusing on a different racial and/or ethnic minority group: the National Comorbidity Survey Replication (NCS-R), the National Survey of American Life (NSAL), and the National Latino and Asian American Study (NLAAS), ensuring that measures utilized yielded reliable and valid results across different sub-groups. The CPES was released for public use in 2006 along with the initial release of the three individual datasets.

The National Comorbidity Survey Replication (NCS-R)’s primary investigator, Dr. Ronald Kessler, developed an instrument to capture a second wave of data after implementing the NCS between 1990 and 1992; the NCS-R was implemented between 2000 and 2002. “The goals of the NCS-R are to study trends in a wide range of variables assessed in the baseline NCS and to obtain more information about a number of topics either not covered in the baseline NCS or covered in less depth than we currently desire” (NCS 2005, P1). In conjunction with the NCS-R, the NCS-2 was administered by
recontacting original respondents to the NCS to capture longitudinal data. The NCS-A was a specialized sub-survey for adolescents and children. This study uses data from the NCS-R. The NCS-R data provides a pivotal component to the usability of the CPES by providing a sizable comparison group – White Americans, not sufficiently found in either of the other two datasets.

The NCS-R’s survey population included adults (18+) residing in households in the continuous United States. Non-English speakers were excluded from this data collection. Although this exclusion may lead to bias when the NCS-R is reviewed independently, in conjunction with the NLAAS (which offers translated surveys) a fuller population is represented. Regardless, there were implications of this exclusion including a set of non-English speaking minorities being excluded from analysis and an inability to compare racial ethnic minorities from this dataset to the NLAAS which includes non-English speaking individuals. A four-stage national area probability sample was used. The final sample included 13,054 sample housing units screened for eligible adults and 9,282 completed interviews with eligible respondents. The survey sample included up to two adults per household in their final dataset. For this analysis, households as a unit will not be used. Rather, individuals, regardless of household, will be included and analyzed.

The National Survey of American Life: Coping with Stress in the 21st Century (NSAL), a national area probability sample, was designed and implemented by the Program for Research on Black Americans at the University of Michigan’s Institute for Social Research, directly under the guidance and supervision of Dr. James Jackson.

“The primary goal of the NSAL was to gather data about the physical, emotional, mental, structural, and economic conditions of Black Americans at the beginning of the
new century” (ISR UMICH 2009, P2). The NSAL, similar to the NCS-R, builds upon an earlier survey and subsequent data -- the National Survey of Black Americans (NSBA). The NSBA is a national probability study of adult American Blacks; this survey was administered between 1979 and 1980, while the NSAL was implemented in the early part of this century (2002). A feature of the NSAL contributing to the utility of performing cross-cultural comparisons is the oversampling of American Blacks and those of African or Caribbean descent. “A total of 6,082 face-to-face interviews were conducted with persons aged 18 or older, 3,570 African Americans, 891 non-Hispanic Whites, and, for the first time in a national survey, 1,621 Black respondents of Caribbean descent” (ISR UMICH 2009, P3). Over 26,000 sample housing units were screened for eligible adults and 6,199 completed interviews with eligible respondents. It was possible for more than one individual per household to complete the survey.

The third dataset included under the CPES umbrella is the National Latino and Asian American Study (NLAAS). The primary investigators were Dr. Margarita Alegría from the Center for Multicultural Mental Health Research at Cambridge Health Alliance/Harvard Medical School and Dr. David Takeuchi from the University of Washington. “The National Latino and Asian American Study (NLAAS) provides national information on the similarities and differences in mental illness and service use of Latinos and Asian Americans. The NLAAS is one of the most comprehensive studies of Latinos and Asian Americans ever conducted...” (CMMHR 2009, P3). NLAAS respondents were eighteen years or older, community dwelling in the coterminous United States or Hawaii (Alaska was excluded). All respondents had to be of Hispanic/Latino/Spanish or Asian origin. The NLAAS instrument was available to
respondents in a variety of languages, including English, Spanish, Chinese, Vietnamese, or Tagalog. NLAAS data was collected between May 2002 and November 2003. A four-stage national area probability sample was used which included special supplements for respondents of Puerto Rican, Cuban, Chinese, Filipino or Vietnamese descent. Screening included 27,026 sample housing units; 4,649 eligible adults completed interviews.

Please note that although the CPES data has been available since 2007, the data collection, as mentioned previously, was conducted from 2001-2003 inclusive. The socio-political landscape has changed immensely (adopting a more conservative, anti-immigrant stance) over the past decade; therefore, if the data was collected in 2012, the results may look different.

B. Population, Data Collection, Sample, and Response Rate

The target population for the above studies was U.S. residing adults aged eighteen and older (men and women). Each survey had a different target population in terms of race or ethnicity. As mentioned, the NLAAS focused on Asians and Hispanics. The NSAL had an emphasis on Blacks, both African Americans and Afro-Caribbean. Kessler’s NCS-R was a general population sample with predominance upon White Americans.

The core CPES questionnaire, used in all three sub-surveys, was based on the World Health Organization’s (WHO) expanded version of the Composite International Diagnostic Interview (CIDI) developed for the World Mental Health (WMH) Survey.

“The CIDI was an expansion of the Diagnostic Interview Schedule (DIS), the first standardized psychiatric diagnostic interview developed for administration by lay
interviewers. The CIDI was designed to produce diagnoses based on WHO International Classification of Disease (ICD) criteria, while diagnoses from the DIS could only be made based on American Psychiatric Association (APA) Diagnostic and Statistical Manual (DSM) of Mental Disorders criteria... DIS and CIDI validity studies suggest that there is a significant correlation between diagnoses based on data collected using the DIS and CIDI and diagnoses made by clinicians who reinterview a sample of respondents…” (ICPSR CPES 2009, QN Development Section).

Computer Assisted Interviewing (CAI) was used to administer the CPES surveys; this technology automatically directs the interviewer through complicated skip patterns and ensures that data is logged properly. The surveys were programmed using a tool called Blaise, designed to accommodate complicated skip patterns and sub-sampling algorithms.

For the NLAAS, the NCS-R, and the NSAL, questionnaire design and testing took approximately one year to complete. A conscious decision was made to finalize the NCS-R tool first, so that the psychiatric disorder sections could be replicated in the NLAAS and the NSAL.

The CPES samples and data collections were based “on a multi-stage area probability sample conducted in a total of 252 geographic areas or primary sampling units across the United States” (ICPSR CPES 2009, Sampling Design Section). The University of Michigan Survey Research Center's (SRC) national sample design was utilized, and the probability samples for each survey attempted to “optimize the cost and error properties of the study-specific samples” (ICPSR CPES 2009, Sampling Design Section).
The probability sample for each study utilized a four-step sampling process. Step one was a sampling of Metropolitan Statistical Areas (MSAs) and counties. Step two then sampled area segments, within the MSAs. Step three used randomly sampled housing units in the area segments, and finally, step four included the selection of eligible household respondents (random). The primary stage units (PSUs) of SRC's National Sample were MSAs, single counties, or groupings of counties with small populations that neighbored each other.

“In each CPES sample design, PSUs are assigned to explicit sampling strata based on MSA/non-MSA status, PSU size, geographic location, and population characteristics… The designated second-stage sampling units (SSUs) in each CPES sample design are termed area segments. Area segments were formed by linking geographically contiguous census blocks to form units with a minimum number of occupied housing units. Within primary stage units, area segments were stratified at the county level by geographic location and race/ethnicity composition of residents’ households. The race/ethnicity stratification of area segments played a particularly important role in the NSAL and NLAAS sample designs… in area segments with higher densities of households for targeted race and ethnicity subpopulations…” (ICPSR CPES 2009, Sampling Design Section).

A sample of housing units was selected for interviews in accordance with a predetermined sampling rate. Although not included herein, lists of all PSUs and SSUs for each iteration of each survey were readily available.

The NCS-R had an initial sample of 13,054 addresses. In 98.1% of occupied households, eligibility was determined; 10,622 addresses were eligible. Over nine thousand face-to-face interviews were completed. Over seven thousand (7,693) interviews were conducted with the primary respondent, and about fifteen hundred were
with a secondary respondent within the housing unit; thus, more than one member per household could participate. The NSAL identified 11,634 eligible households of over twenty-six thousand randomly sampled addresses. Approximately six thousand interviews were conducted; 4,842 of these interviews were with the primary respondent. Finally, the NLAAS identified a total initial sample of 27,026 households; 3,620 primary interviews were completed along with 1,029 secondary interviews. Response rates of each survey are listed below in Table 2.

<table>
<thead>
<tr>
<th>Survey</th>
<th>Primary Interviews</th>
<th>Response Rate (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>NCS-R</td>
<td>7,693</td>
<td>70.9</td>
</tr>
<tr>
<td>NSAL</td>
<td>4,842</td>
<td>71.5</td>
</tr>
<tr>
<td>NLAAS</td>
<td>3,620</td>
<td>75.7</td>
</tr>
</tbody>
</table>

**C. Weights and Characteristics of the Data**

Although twelve weights were available for application to the CPES data, only two weights were considered full CPES weights; the others were designed to adjust data from one of the three individual data sets only. For this project, only the CPESWTSH and CPESWTLG weights were applicable.

A two-dimensional array was used to adjust measure values to create a new weight variable for fully integrated CPES analyses (ICPSR 2009; P3). The first dimension of this process was to identify notable minority groups represented in the data. The following were selected due to their sizable presence: Vietnamese from the NCS-R
and NLAAS, Filipino from the NCS-R and NLAAS, Chinese from the NCS-R and NLAAS, All Other Asian from the NCS-R and NLAAS, Cuban from the NCS-R, NLAAS, and NSAL, Puerto Rican from the NCS-R, NLAAS, and NSAL, Mexican from the NCS-R and NLAAS, All Other Hispanic from the NCS-R, NLAAS, and NSAL, Afro-Caribbean (non-Hispanic) from the NCS-R and NSAL, Blacks (non-Hispanic) from the NCS-R and NSAL, White from the NCS-R and NSAL, and All Other (Pacific Islander, Native American, etc.) from all three datasets. If a respondent identified him or herself as of multiple race/ancestry, he/she was allocated to a single category based on the priority order specified in the NLAAS and NSAL classification rules.

The second step of the weight computation was based on geography and the 2000 U.S. Census population data (see Heeringa et al., 2004). After both processes were completed, two weights were developed: the CPESWTSH and CPESWTLG. The CPESWTSH should be used when the clinical diagnostic variables are not used (epidemiological mental health measures are used); these measures were validated and checked by a clinician who analyzed the data from a medical vantage rather than a sociological or epidemiological view. When the basic, standard survey without expansion is used, the preferred weight is the CPESWTSH, which is used for this analysis. The CPESWTSH yields a total expansion to over 200 million cases. A more expansive description of the weight development process, including applicable formulas, is found in Heeringa and Berglund’s work (2008). In total, fourteen weights were created to accommodate an array or permutations in dividing the data. Regardless of method used, when analyzing the CPES data, a weight must always be used to gain national
representativeness due to the intentional oversampling of racial and ethnic minorities (Heeringa and Berglund 2008).

**D. Measures**

*1. Outcome Measures, Mental Illnesses*

The main outcome being examined is mental illness. The two specific types of mental illness included in this analysis were depression and anxiety. Both selected illness measures were diagnostic constructed measures derived from survey data. Depression was assessed through a self-reporting of major depressive disorder symptoms. Then the results were collated into the first depression variable, V07876 is described as “DSM-IV Major Depressive Disorder w/ hierarchy (Lifetime).” This variable was based on a series of markers and was ultimately coded as endorsed (coded 1) and not endorsed (coded 5) only. No values were assigned to codes 2-4. The measure encompassed the following series of questions or classifications:

1. Presence of a Major Depressive Episode -- Major Depressive Episode is “Yes,”

2. The Major Depressive Episode is not better accounted for by Schizoaffective Disorder and is not superimposed on Schizophrenia, Schizophrenia-form Disorder, Delusional Disorder, or Psychotic Disorder Not Otherwise specified -- The Depressive Episode is a true episode not a manifestation of another mental illness, and

3. There has never been a Manic Episode, a Mixed Episode, or a Hypomanic Episode – there is no indication of Mania.
If an individual met all three of the above criteria, he/she was labeled as depressed for purposes of this project.

The second outcome to be examined is General Anxiety Disorder. General Anxiety, V07858, is referred to as “DSM-IV Generalized Anxiety Disorder (Lifetime) in the data descriptions of the CPES. Response categories included endorsed (coded 1) and not endorsed (coded 5) only; these same categories will be kept for the analysis proposed in this study. The construction of this diagnostic measure was determined through the following series of classifications derived from answers to certain questions: 1. Anxiety and worry (apprehensive expectation) where SC26, SC26a, or SC26b is “Yes”. SC26 asked

1. “Did you ever have a time in your life when you were a "worrier" -- that is, when you worried a lot more about things than other people with the same problems as you?” SC26a asked “Did you ever have a time in your life when you were much more nervous or anxious than most other people with the same problems as you?” SC26b specifically asked “Did you ever have a period of time lasting one month or longer when you were anxious and worried most days?”

2. Anxiety occurring more days than not for at least 6 months,

3. Anxiety about a number of events or activities (such as work or school performance) occurs in the case of two or more incidents/activities,

4. The person finds it difficult to control the worry,

5. The anxiety and worry were associated with three (or more) of the following six symptoms(with at least some symptoms present for more days than not for
the past 6 months) (1. restlessness or feeling keyed up or on edge, 2. being easily fatigued, 3. difficulty concentrating or mind going blank, 4. irritability, 5. muscle tension, 6. sleep disturbance),
6. The anxiety and worry should not occur exclusively during PTSD, and
7. The anxiety, worry, or physical symptoms cause clinically significant distress.

2. Independent Variables, Ethnicity and Nativity

Race and ethnicity were identified through the RANCEST variable, which was originally self-reported. RANCEST is a computed measure based upon multiple measures within the three surveys. RANCEST has twelve response categories: Vietnamese (coded as 1), Filipino (coded as 2), Chinese (coded as 3), All Other Asian (coded as 4), Cuban (coded as 5), Puerto Rican (coded as 6), Mexican (coded as 7), All Other Hispanic (coded as 8), Afro-Caribbean (coded as 9), Blacks (coded as 10), Non-Latino Whites (coded as 11), All Other (coded as 12). Responses where a refusal occurred were coded as -9 and where a “don’t know” response was logged were coded with a -8. Although this measure collapses the fine granularity found in the CPES data, for the analysis proposed in this project, further compression occurs. All Asian categories (e.g. Pilipino, Japanese, Chinese, Korean, etc.) have been grouped together rather than analyzing each sub-group and all Latinos (e.g. Mexican, Cubans, etc.) have been grouped together since difference across sub-ethnicities is not within the scope of this project.

Nativity is found in V05700, which is simply listed as “country in which you were born.” Only two primary options exist, the United States (coded 1) and other (coded 2). To derive the specific country an individual was born in would require cross-linkage
with the RANCEST variable; although unnecessary for the scope of this project the data may prove insightful for future endeavors. Options were available to allocate a refusal (coded -9) or a “don’t know” response (coded -8); however only eleven cases were classified as either in the unweighted data.

3. Independent Variables, Discrimination, Acculturation, and Immigration

Because the CPES focuses on mental health and racial or ethnic status, there were a number of questions about discrimination. However, when reviewing response rate and direct relevance to the hypotheses suggested two domains were chosen for this analysis, based on frequency and severity of perceived discrimination. The first measure is based on the question (V06539) “In your day-to-day life how often have any of the following things happened to you? You are treated with less respect than other people due to your [insert ethnicity]?”. Response categories for variable V06539 included almost every day (coded 1), at least once a week (coded 2), a few times a month (coded 3), a few times a year (coded 4), less than once a year (coded 5), or never (coded 6). Those who refused to respond to this question were coded as -9, and those reporting that they did not know the answer to the question were coded as a -8. Missing values were retained as blank entries. To ensure accurate interpretation of statistical results, this measure was reverse coded so that those encountering the most frequent discrimination were coded as 6 and those never encountering discrimination were coded as 1.

The second measure of discrimination, which is asked if discrimination is established in a prior measure, for this analysis is based on a series of questions to determine severity of discrimination (V06546, V06545, V06543, and V06541). V06546
reads, “In your day-to-day life how often have any of the following things happened to you? You are threatened or harassed due to your [insert ethnicity]?” V06545 reads, “In your day-to-day life how often have any of the following things happened to you? You are called names or insulted.” V06543 reads, “In your day-to-day life how often have any of the following things happened to you? People act as if they think you are dishonest.” Finally, V06541 reads, “In your day-to-day life how often have any of the following things happened to you? People act as if they think you are not smart.” Response categories for these variables mirror the prior discrimination question: almost every day (coded 1), at least once a week (coded 2), a few times a month (coded 3), a few times a year (coded 4), less than once a year (coded 5), or never (coded 6). Those who refused to respond to this question were coded as -9, and those reporting that they did not know the answer to the question were coded as a -8. Missing values were retained as blank entries which were eliminated from the analysis. Responses from all four variables were combined into a single measure, which were reverse coded to facilitate appropriate interpretation of results. Although this construct, discrimination, has multiple measures, there are still some notable limitations, 1. Institutionalized discrimination is not measured, and 2. These measures focus on very specific behaviors or incidents not leaving room for more general discriminatory encounters.

As highlighted in the review of the literature, acculturation is difficult to conceptualize and measure. Although, the CPES classifies multiple variables under the acculturative stress heading, many were variations of acculturation. A single variable has been included in this analysis to represent acculturation, which is V06574, “Please tell me if you have felt this way, in the following situations: Do you find it hard interacting
with others because of difficulties you have with the English language?” Response categories included yes (coded 1), no (coded 5), not applicable (coded 7), don’t know (coded -8), refused (coded -9), and missing (coded as null or blank). Examples of measures that were not included are: “Have you felt guilty for leaving family or friends in your country of origin?” and “Do you avoid seeking health services due to fear of immigration officials?” The first speaks more towards psychosocial well-being, and the second feels appears more like a discrimination measure; however, both were associated with acculturation.

4. Independent Variables, Alcohol Consumption and Cigarette Smoking

Heavy drinking or alcoholism is known to be correlated with the diagnosis of mental illness (NAMI 2009; McCreadie 2008). To represent heavy alcohol consumption, the variable V07831 is used. This is a computed diagnostic measure that represents if a respondent has ever qualified for the DSM-IV diagnosis of alcohol abuse in his/her lifetime. Response categories include endorsed, meaning yes, this respondent has abused alcohol (coded 1), not endorsed, meaning no, this respondent has never abused alcohol (coded as 5). The construction of this diagnostic measure occurred through summing the answers of the following series of questions or classifications: 1. A maladaptive pattern of alcohol use leading to clinically significant impairment or distress, as manifested by one (or more) of the following:

   1. Occurring within a 12-month period: recurrent substance use resulting in a failure to fulfill major role obligations at work, school, or home (e.g., repeated absences
or poor work performance related to alcohol use; alcohol-related absences, suspensions, or expulsions from school; neglect of children or household),

2. Recurrent alcohol use in situations in which it is physically hazardous (e.g., driving an automobile or operating a machine when impaired by alcohol use),

3. Recurrent alcohol-related legal problems (e.g., arrests for alcohol-related disorderly conduct), continued alcohol use despite having persistent or recurrent social or interpersonal problems caused or exacerbated by the effects of alcohol (e.g., arguments with spouse about consequences of intoxication, physical fights), and

4. The symptoms present have never met the criteria for an Alcohol Dependence, diagnosis.

Smoking is another lifestyle linked to numerous physical health outcomes and is correlated with certain mental health outcomes (Arehart-Treichel 2003; NIMH 2009). The CPES question for smoking was simple, V04597: “Do you currently smoke?” Response categories include yes (coded 1), no (coded 5), and missing data was denoted with a -7, -8, or a -9. Variables representing frequency of cigarette smoking (e.g. V04617, V04610) were available; however, their low response rates in the CPES make them difficult to incorporate into this analysis.

5. Independent Variables, Socioeconomic and Sociodemographic

Respondent’s sex was recorded by the interviewer based on physical characteristics. Response options included male (coded 1) and female (coded 2) only. This may cause data integrity issues in certain circumstances where a respondent’s
gender is ambiguous. For this effort, male and female were recoded to correspond with traditional sociological coding (males=0 and females = 1). Age is a continuous measure, V07306, bottom coded at eighteen and top coded at ninety-nine. Unfortunately the documentation for the CPES does not describe if age was assessed by determination from birthdate or by self-reported age at the time of the interview.

Education was measured through the constructed variable V08172, a four category education classification system: 0-11 years of schooling completed (coded 1), 12 years completed (coded 2), 13-15 years completed (coded 3), and greater than or equal to 16 years of schooling completed (coded 4). Income was assessed by a continuous measure ranging from $0 per year per household to the top-coded value of $200,000 per year per household; respondents stated their actual income rather than selecting an income bracket (V08683). Of the 20,013 unweighted cases, 3,590 were missing values for household income.

E. Analysis

Weighting of the CPES data is used in all bivariate and multivariate analyses, as recommended by ICPSR (2009) to realign the data to national parameters, since the data has been oversampled for racial and ethnic minorities. Due to these weighting procedures, sub-group sample sizes do not necessarily equal the total sample size when added together.

Univariate analysis were conducted on all variables, outcome measures and independent variables alike, prior to advancing to more sophisticated methods to identify potential issues in the data (skews, outliers, etc.). Univariate analysis were performed
before and after recoding to avoid problems of compression. These analyses also identified missing data, particularly pertinent to the success of the proposed analysis because of the combination of three independent datasets with varying minority populations.

Bivariate analysis was performed to further investigate the variables selected for this research project. This secondary analysis identified such relationships at a rudimentary level informing tertiary analysis and exploration. T-tests were used to examine the relationship between the identified mental illnesses and independent variables, such as nativity, socioeconomic status, and gender. Correlations were utilized to examine associations between variables.

Logistic regression analysis has been selected to estimate the probability of being diagnosed with a mental illness, specifically major depressive disorder or generalized anxiety disorder. This methodology was selected because the dependent variables were dichotomous, one response represents the presence of a specific mental illness and the other response category represents the absence of a mental illness diagnosis. Logistic regression calculates changes in the log odds of the dependent variable. It does not calculate changes in the dependent variable itself. In addition, logistic regression does not assume a normal distribution or linearity (Dallal 2001, Section 2).

Additionally, since logistic regression was used to predict the percent of variance in the dependent variable explained by the continuous and/or categorical independent variables by the Nagelkerke $R^2$ statistic, this methodology seemed an ideal fit given the nature of measures for this study. By providing a statistic (Nagelkerke $R^2$) as percentage explained, the unexplained variance amount is also explicit.
Blocks of models were developed to include measures within theoretical groups such as sociodemographics or lifestyle measures. Blocks were examined individually to express their individual explanatory power. Blocks will then be entered into the overall analysis in a stepwise fashion to illustrate potential shifts in explanatory power with the inclusion of each block.
CHAPTER FOUR

RESULTS

A. Descriptive Statistics

1. Weighting

Table 3 presents weighted and unweighted frequencies for the entire sample. Of the total respondents (unweighted n = 20,013, weighted n = 209,500,125), approximately 52% were female. About 72% of respondents self-reported being White. The next most prevalent ethnic/racial group was Hispanics at 12%, followed by Blacks at 11%. Asians comprised 4% of the weighted populations, and Afro-Caribbeans represented less than 1%. Weighting significantly adjusted the racial and ethnic composition of this sample, increasing the percentage of Whites by almost 34% and decreasing the rate of other groups to compensate to match U.S. Census estimates. However, weighting did not make as noticeable of a change to age allocations; the average age was 45 years. No children, those under the age of eighteen, were included. Individuals aged 18-28 (the youngest group interviewed), also known as Generation Y comprised 22% of respondents, and the oldest respondents, aged seventy and older, represented 11% of the weighted sample. Although weighting did not affect the youngest age group, it did increase the percent of the oldest by almost 2%. The largest age group, regardless of whether the sample was weighted, was those aged 29-40 (Generation X) at 27% unweighted and 23% weighted.
Education and income were included as socio-economic measures. Education was represented by four categories, the completion of 0-11 years of education, 12 years, 13-15 years, and 16 years. Both pre- and post-weighting, the 0-11 years of education completed category had the fewest respondents at 20% unweighted and 18% weighted, and the 12 years completed (high school graduate) had the largest number of respondents at 30% unweighted and 31% weighted. Weighting increased the percentage of respondents with a high school level of education and higher and compensated by decreasing the percent of those with 0-11 years of completed schooling. The average household income of the sample was about $56,000 annually. When segmented into categories, weighting affected the lowest two income categories the most. Those earning under $25,000 shifted up from 47% to 49%, and those families earning $25,000 to $50,000 shifted down from 23% to 19%. Those in the highest two income categories, families earning $150,000 to $199,000 and those earning $200,000+ a year represented about 2% of the sample in each category. Thus there were sizably more families living on less than $25,000 a year as compared to the wealthiest comprising only a small percentage of the sample.

Weighting also marginally affected both mental health outcome measures and health lifestyle measures. Those with depression comprised about 14% of the sample prior to weighting and 16% post-weighting. Whereas, anxiety went up by a lesser degree from 6% to 7%. Those who abuse alcohol went from 9% up to 11%, and those who self-identified themselves as a smoker increased by about 1%. Finally, due to oversampling of racial and ethnic minorities, the percent of those born outside of the United States in the unweighted sample was particularly high at almost 29%. This was weighted down to 13% to mirror U.S. Census estimates.
Table 3
Frequencies of Measures Pre and Post Weighting (Unweighted n = 20,013, Weighted n = 209,500,125)

<table>
<thead>
<tr>
<th>Socio-Demographics</th>
<th>Unweighted Percent</th>
<th>Weighted Percent</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Race/Ancestry</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>38.5%</td>
<td>72.2%</td>
<td>33.70%</td>
</tr>
<tr>
<td>Asian</td>
<td>11.6%</td>
<td>4.4%</td>
<td>-7.20%</td>
</tr>
<tr>
<td>Hispanic</td>
<td>18.4%</td>
<td>12.0%</td>
<td>-6.40%</td>
</tr>
<tr>
<td>Afro-Caribbean</td>
<td>7.6%</td>
<td>0.7%</td>
<td>-6.90%</td>
</tr>
<tr>
<td>Black</td>
<td>24.0%</td>
<td>10.7%</td>
<td>-13.30%</td>
</tr>
<tr>
<td><strong>Sex</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>57.3%</td>
<td>51.9%</td>
<td>-5.40%</td>
</tr>
<tr>
<td><strong>Age</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Generation Y (18-28)</td>
<td>21.6%</td>
<td>21.7%</td>
<td>0.10%</td>
</tr>
<tr>
<td>Generation X (29-40)</td>
<td>26.7%</td>
<td>23.2%</td>
<td>-3.50%</td>
</tr>
<tr>
<td>Trailing Boomers (41-50)</td>
<td>18.4%</td>
<td>18.7%</td>
<td>0.30%</td>
</tr>
<tr>
<td>Leading Boomers (51-59)</td>
<td>14.7%</td>
<td>15.6%</td>
<td>0.90%</td>
</tr>
<tr>
<td>Matures (60-69)</td>
<td>9.3%</td>
<td>10.1%</td>
<td>0.80%</td>
</tr>
<tr>
<td>After Work (70+)</td>
<td>8.9%</td>
<td>10.6%</td>
<td>1.70%</td>
</tr>
<tr>
<td><strong>Socio-Economics</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Education</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0-11 Years</td>
<td>20.3%</td>
<td>17.8%</td>
<td>-2.50%</td>
</tr>
<tr>
<td>12 Years</td>
<td>29.7%</td>
<td>31.1%</td>
<td>1.40%</td>
</tr>
<tr>
<td>13-15 Years</td>
<td>26.4%</td>
<td>26.8%</td>
<td>0.40%</td>
</tr>
<tr>
<td>16 Years</td>
<td>23.4%</td>
<td>24.2%</td>
<td>0.80%</td>
</tr>
<tr>
<td><strong>Income</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; $25,000</td>
<td>46.9%</td>
<td>49.0%</td>
<td>2.10%</td>
</tr>
<tr>
<td>$25,000 - $49,999</td>
<td>22.5%</td>
<td>19.1%</td>
<td>-3.40%</td>
</tr>
<tr>
<td>$50,000 - $74,999</td>
<td>12.8%</td>
<td>13.3%</td>
<td>0.50%</td>
</tr>
<tr>
<td>$75,000 - $99,999</td>
<td>7.2%</td>
<td>7.7%</td>
<td>0.50%</td>
</tr>
<tr>
<td>$100,000 - $149,999</td>
<td>6.0%</td>
<td>6.4%</td>
<td>0.40%</td>
</tr>
<tr>
<td>$150,000 - $199,999</td>
<td>2.4%</td>
<td>2.4%</td>
<td>0.00%</td>
</tr>
<tr>
<td>$200,000+</td>
<td>2.1%</td>
<td>2.2%</td>
<td>0.10%</td>
</tr>
<tr>
<td><strong>Mental Health Outcomes</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>With Depressive Disorder</td>
<td>14.3%</td>
<td>16.4%</td>
<td>2.10%</td>
</tr>
<tr>
<td>With Anxiety</td>
<td>6.2%</td>
<td>7.3%</td>
<td>1.10%</td>
</tr>
<tr>
<td><strong>Health Lifestyles</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 3 Continued:
Frequencies of Measures Pre and Post Weighting (Unweighted n = 20,013, Weighted n = 209,500,125)

<table>
<thead>
<tr>
<th></th>
<th>Unweighted Percent</th>
<th>Weighted Percent</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alcohol Abuse</td>
<td>9.1%</td>
<td>11.4%</td>
<td>2.30%</td>
</tr>
<tr>
<td>Smoker</td>
<td>63.4%</td>
<td>64.5%</td>
<td>1.10%</td>
</tr>
</tbody>
</table>

Nativity and English Proficiency

<table>
<thead>
<tr>
<th></th>
<th>Unweighted Percent</th>
<th>Weighted Percent</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Born Outside the U.S.</td>
<td>28.5%</td>
<td>13.4%</td>
<td>-15.10%</td>
</tr>
<tr>
<td>Lack of Proficiency</td>
<td>40.2%</td>
<td>40.7%</td>
<td>0.50%</td>
</tr>
</tbody>
</table>

2. Means and Standard Deviations

Table 4 provides the mean for ratio data or the percent for nominal/ordinal data and standard deviation of measures used within this analysis (for the weighted data), identified and selected in the prior sections. Since many of the measures were reassigned to binary coding, the mean reflects the percentage of individuals who identified with the given condition. For example, 16% of respondents were depressed, 7% had generalized anxiety, 11% abused alcohol, and 65% were smokers. Additionally, 52% were female, and the average age was 45. The average household income was about $56,000. Seventy one percent were White, 4% Asian, 12% Hispanic, 1% Afro-Caribbean, and 11% were Black. Thirteen percent were born outside of the United States.

The acculturation measure showed that 23% of the weighted sample had challenges with English proficiency. The discrimination measures were on a scale from 1-5; thus the mean reflects the average score on that scale. In all five measures (as well as in some of the ones discussed in the prior paragraph), the standard deviation is larger than the mean. Since, the standard deviation is a measure of the data spread/dispersion; this indicates that the data is slightly skewed. No adjustments were made to this data in subsequent sections.
Table 4
Descriptive Statistics of Measures (n = 209,500,125)

<table>
<thead>
<tr>
<th>Measure</th>
<th>% or Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>DSM-IV Major Depressive Disorder w/ hierarchy (LifeT)</td>
<td>.16 .370</td>
<td></td>
</tr>
<tr>
<td>DSM-IV Generalized Anxiety Disorder (LifeT)</td>
<td>.07 .261</td>
<td></td>
</tr>
<tr>
<td>Race/Ancestry</td>
<td>.73 1.328</td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>.71</td>
<td></td>
</tr>
<tr>
<td>Asian</td>
<td>.04</td>
<td></td>
</tr>
<tr>
<td>Hispanic</td>
<td>.12</td>
<td></td>
</tr>
<tr>
<td>Afro-Caribbean</td>
<td>.01</td>
<td></td>
</tr>
<tr>
<td>Black</td>
<td>.11</td>
<td></td>
</tr>
<tr>
<td>Country in which you were born</td>
<td>.13 .340</td>
<td></td>
</tr>
<tr>
<td>Frequency treated w/ less respect than others</td>
<td>1.19 1.212</td>
<td></td>
</tr>
<tr>
<td>Frequency threatened/harassed</td>
<td>.50 .811</td>
<td></td>
</tr>
<tr>
<td>Frequency called names/insulted</td>
<td>.73 1.092</td>
<td></td>
</tr>
<tr>
<td>Frequency people act like you are dishonest</td>
<td>.74 1.064</td>
<td></td>
</tr>
<tr>
<td>Frequency people act like you are not smart</td>
<td>1.19 1.322</td>
<td></td>
</tr>
<tr>
<td>Interaction hard due to difficulty with English language</td>
<td>.23 1.390</td>
<td></td>
</tr>
<tr>
<td>DSM-IV Alcohol Abuse (Lifetime)</td>
<td>.11 .318</td>
<td></td>
</tr>
<tr>
<td>Currently smoke</td>
<td>.65 .478</td>
<td></td>
</tr>
<tr>
<td>Sex</td>
<td>.52 .500</td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>44.58 17.438</td>
<td></td>
</tr>
<tr>
<td>Years of education-4 categories</td>
<td>2.57 1.042</td>
<td></td>
</tr>
<tr>
<td>Household Income : Topcode</td>
<td>56002.20 47452.515</td>
<td></td>
</tr>
</tbody>
</table>

3. Depression and Generalized Anxiety Correlates

Bivariate analysis was performed by comparing those individuals who were depressed or those who had generalized anxiety disorder against those who did not within a given measure. For example, the rate of depression was analyzed across racial and
ethnic minority groups using Whites as a comparison group in the table below. All measures were found to be correlated at the .001 level.

With the application of the CPES Short Weight, increasing the sample size from 20,013 to 209,500,125 records, an artificial inflation of significant differences is found. The statistical power is high, and the likelihood of Type II errors increased. Conceptually, the power of a statistical test is the probability that it will accurately yield a rejection of a false null hypothesis; said differently, it is the ability of a test to correctly ascertain a statistical difference (Greene 2000; Cohen 2008). When the power is “too high” or the sample, as is in this case of weighted data, is extremely large, the smallest of difference become statistically significant, even though the differences may not be meaningful or particularly large. As a precaution, this data was run (as a check) without the weights; significant differences were still found; thus, the weighted values have been reported, since these were generalizable to the U.S. population.

All racial and ethnic minority groups had significantly lower rates of depression and anxiety as compared to Whites at 17.9% and 8.4%, with Asians holding the lowest rates of depression (8.6%) and anxiety (2.2%) compared to Hispanics having the highest rates of depression (13.7%) and Blacks having the highest rates of anxiety (4.6%). A significant difference was also found in terms of sex. Females exhibited significantly higher rates of depression and anxiety as compared to males. For Hypothesis 1:

*Regardless of race or ethnicity, women will have higher odds of having worse mental health, specifically depression and anxiety, than men,* a trend is identified in which females in general were found to have higher rates of negative mental health outcomes as compared to males.
Hypothesis 2: Age will be correlated with rate of mental illness. Specifically, those younger than 50 will have higher odds of having a mental illness than those fifty and older – is loosely supported. The average categorical percent of those fifty and younger with depression is 17.6% as compared to those over fifty 13.4%. Furthermore, the two highest rates of depression are found in 29-40 and those 41-50; the lowest rate was found in individuals seventy and older. The results comparing age groups to anxiety were more varied. The average categorical rate of anxiety for the three lower age groups was 7.6% as compared to 6.7% for the older age groups, but the highest two rates of anxiety span the two middle age groups, 41-50 and 51-59. The lowest rate of anxiety was still found in the oldest age group of 70+.

Education and income were used to measure socioeconomic status and were cited in Hypothesis 3: Regardless of race or ethnicity, socioeconomic status will be correlated with rate of mental illness. Specifically, (3A) those with lower levels of education will have higher odds of suffering from depression or anxiety, and (3B) those with lower levels of income will have higher odds of suffering from depression or anxiety. The data was found to have statistically significant relationships between depression and anxiety as compared to education and income categories using the lowest levels of income or education as the reference group, yielding a simple correlation between education, income, depression, and anxiety. Furthermore, the opposite trend of what was hypothesized has been supported. Those with lower levels of education or lower levels of income were found to exhibit lower rates of depression and anxiety. Those with 0-11 years of education had a 14.4% rate of depression and a 6.5% rate of anxiety as compared to a depression rate of 17.2% and an anxiety rate of 8.0% in those with 16+ years of
education. The trend in income categories was similar; those earning less than $25,000 years had a depression rate of 9.5% and an anxiety rate of 4.4%. This is compared to those earning $200,000+ who had an aggregate depression rate of 26.1% and 5.2%. Interestingly, the rate of anxiety spiked in middle income categories, reaching its peak in the $75,000-$99,999 category at 12.3%.

Hypotheses 4 and 5 related to the health lifestyles and mental health outcomes literature. Hypothesis 4 states: *excessive alcohol consumption will be correlated with an increase in negative mental health outcomes. Those who abuse alcohol will have higher odds of having depression or anxiety,* and hypothesis 5 states that *smoking will be correlated with an increase in negative mental health outcomes. Those who smoke will have higher odds of having depression or anxiety.* Both these hypotheses were supported, and statistically significant differences were found. The rate of depression was 30.2% and the rate of anxiety was 14.8% in those who were deemed to abuse alcohol as compared to a depression rate of 14.4% and an anxiety rate of 6.4% in those who did not. The rate of depression was 13.0% and the rate of anxiety was 6.6% in those who smoked as compared to a depression rate of 9.5% and an anxiety rate of 3.8% in those who did not. Thus, strong support was found for Hypothesis 4 and Hypothesis 5.

The last two hypotheses that could be tested through bivariate analysis related to discrimination and acculturation. Hypothesis 8 stated that *acculturation will be correlated with diagnosis of mental illness. Those who exhibit higher rates of acculturation will have higher odds of being diagnosed as having mental illness,* and hypothesis 9 reads: *discrimination will be correlated with diagnosis of mental illness.*
mental illness. Since acculturation was measured through a single question pertaining to English proficiency, interpreting the results are less complicated than interpreting the results of mental health outcomes compared to discrimination, which included multiple measures. Hypothesis 8 was statistically supported by those with English proficiency showing a higher rate of depression (11.9% v. 9.4%) and anxiety (3.4% v. 3.2%) as compared to those individuals who could not comfortably speak English. However, because the weighted sample was so large, and the statistical power was so great, the difference in rate of anxiety 3.4% for English speakers and 3.2% for non-English speakers may have been the result of a false positive. There was a numeric difference between the two, but it may not have been found to be statistically significant with a smaller sample.

Interpreting the results of discrimination by depression and anxiety could have been complicated; however, a consistent trend was observed. Those who reported never having experienced a given discriminatory behavior had lower rates of depression and anxiety as compared to those who reported routinely encountering discrimination across all measures, supporting Hypothesis 9: discrimination will be correlated with diagnosis of mental illness. Those who encounter discrimination will have higher odds of being diagnosed with a mental illness. Those who did not feel respected daily had a depression rate of 20.7% and an anxiety rate of 7.2% as compared to those who always felt respected (9.3% depression, 2.9% anxiety). Interestingly, those who did not feel respected at least once a week, the second most frequent category, had the highest rates of depression (26.4%) and anxiety (7.8%). Those who were threatened or harassed daily had a depression rate of 24.6% and an anxiety rate of 11.1% as compared to those who were
never threatened or harassed (10.4% depression, 3.6% anxiety). Similarly, those who were threatened or harassed a few times a month, the middle frequent category, had the highest rate of depression (27.3%) and those who were threatened or harassed at least once a week, the second most frequent category, had the highest rate of anxiety (12.8%). Those who were called names or insulted daily had the highest depression rate of 25.2% and an anxiety rate of 7.9% as compared to those who were never threatened or harassed (10.4% depression, 3.8% anxiety). The highest rate of anxiety was found in those who were called names or insulted at least once a week at 14.7%. Those who were treated as if they were dishonest had a depression rate of 17.9% and the highest anxiety rate of 6.6% as compared to those who were never treated as dishonest (11.2% depression, 4.1% anxiety). The highest rate of depression was found in those who were treated as dishonest at least once a week, the second most frequent category, at 18.8%. The final measure of discrimination pertained to individual being perceived as being “smart.” Those who were treated as unintelligent daily had a depression rate of 22.2% and the highest anxiety rate of 8.9% as compared to those who were never treated an unintelligent (9.9% depression, 3.3% anxiety). The highest rate of depression was found in those who were treated an unintelligent, at least once a week, at 24.2%. In sum, there is consistent support for Hypothesis 9.

Table 5 summarized the findings discussed in this section. For bivariate comparisons, the reference group for a given measure is the one which contains N/A under significance, since a category cannot be compared to itself and yield a meaningful statistic. For example, when comparing the rates of depression and anxiety across racial
and ethnic groups, the reference group selected was Whites, denoted by an N/A in both significance columns.

**Table 5**
*Bi- Variate Analysis for Depression and Anxiety (n = 209,500,125)*

<table>
<thead>
<tr>
<th>Mental Health Outcomes</th>
<th>Depression</th>
<th>Sig</th>
<th>Anxiety</th>
<th>Sig</th>
</tr>
</thead>
<tbody>
<tr>
<td>Major Depressive Disorder</td>
<td>100.0%</td>
<td>N/A</td>
<td>23.8%</td>
<td>***</td>
</tr>
<tr>
<td>Generalized Anxiety Disorder</td>
<td>23.8% ***</td>
<td></td>
<td>100.0%</td>
<td>N/A</td>
</tr>
<tr>
<td><strong>Sociodemographics</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Race/Ancestry</td>
<td>***</td>
<td>***</td>
<td>***</td>
<td>***</td>
</tr>
<tr>
<td>White</td>
<td>17.9% N/A</td>
<td>8.4% N/A</td>
<td>5.1% N/A</td>
<td>9.5% ***</td>
</tr>
<tr>
<td>Asian</td>
<td>8.6% ***</td>
<td>2.2% ***</td>
<td>4.4% ***</td>
<td>***</td>
</tr>
<tr>
<td>Hispanic</td>
<td>13.7% ***</td>
<td>4.4% ***</td>
<td>3.4% ***</td>
<td>***</td>
</tr>
<tr>
<td>Afro-Caribbean</td>
<td>12.8% ***</td>
<td>4.6% ***</td>
<td>3.4% ***</td>
<td>***</td>
</tr>
<tr>
<td>Blacks</td>
<td>10.4% ***</td>
<td></td>
<td>4.6% ***</td>
<td>***</td>
</tr>
<tr>
<td>Sex</td>
<td>***</td>
<td></td>
<td>***</td>
<td>***</td>
</tr>
<tr>
<td>Male</td>
<td>12.6% N/A</td>
<td>8.4% N/A</td>
<td>5.1% N/A</td>
<td>9.5% ***</td>
</tr>
<tr>
<td>Female</td>
<td>19.8% ***</td>
<td></td>
<td>9.5% ***</td>
<td>***</td>
</tr>
<tr>
<td>Age</td>
<td>***</td>
<td></td>
<td>***</td>
<td>***</td>
</tr>
<tr>
<td>Generation Y (18-28)</td>
<td>15.0% N/A</td>
<td>5.1% N/A</td>
<td>5.1% N/A</td>
<td>9.5% ***</td>
</tr>
<tr>
<td>Generation X (29-40)</td>
<td>18.9% ***</td>
<td>7.7% ***</td>
<td>9.9% ***</td>
<td>***</td>
</tr>
<tr>
<td>Trailing Boomers (41-50)</td>
<td>18.9% ***</td>
<td></td>
<td>9.6% ***</td>
<td>***</td>
</tr>
<tr>
<td>Leading Boomers (51-59)</td>
<td>18.7% ***</td>
<td></td>
<td>6.8% ***</td>
<td>***</td>
</tr>
<tr>
<td>Matures (60-69)</td>
<td>13.2% ***</td>
<td></td>
<td>3.7% ***</td>
<td>***</td>
</tr>
<tr>
<td>After Work (70+)</td>
<td>8.4% ***</td>
<td></td>
<td>3.7% ***</td>
<td>***</td>
</tr>
<tr>
<td>Country in which you were born</td>
<td>***</td>
<td></td>
<td>***</td>
<td>***</td>
</tr>
<tr>
<td>U.S.A.</td>
<td>20.9% N/A</td>
<td>9.6% N/A</td>
<td>9.6% N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Other</td>
<td>11.7% ***</td>
<td></td>
<td>4.5% ***</td>
<td>***</td>
</tr>
<tr>
<td>Socioeconomics</td>
<td></td>
<td></td>
<td>***</td>
<td>***</td>
</tr>
<tr>
<td>Education</td>
<td>***</td>
<td>***</td>
<td>***</td>
<td>***</td>
</tr>
<tr>
<td>0-11 Years</td>
<td>14.4% N/A</td>
<td>6.5% N/A</td>
<td>6.5% N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>12 Years</td>
<td>15.4% ***</td>
<td></td>
<td>6.6% ***</td>
<td>***</td>
</tr>
<tr>
<td>13-15 Years</td>
<td>18.0% ***</td>
<td></td>
<td>8.2% ***</td>
<td>***</td>
</tr>
<tr>
<td>16+ Years</td>
<td>17.2% ***</td>
<td></td>
<td>8.0% ***</td>
<td>***</td>
</tr>
<tr>
<td>Income</td>
<td>***</td>
<td></td>
<td>***</td>
<td>***</td>
</tr>
<tr>
<td>&lt; $25,000</td>
<td>9.5% N/A</td>
<td>4.4% N/A</td>
<td>4.4% N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>$25,000 - $49,999</td>
<td>22.8% ***</td>
<td></td>
<td>10.9% ***</td>
<td>***</td>
</tr>
</tbody>
</table>
Table 5 Continued:
Bivariate Analysis for Depression and Anxiety (n = 209,500,125)

<table>
<thead>
<tr>
<th>Income Level</th>
<th>Depression</th>
<th>Sig</th>
<th>Anxiety</th>
<th>Sig</th>
</tr>
</thead>
<tbody>
<tr>
<td>$50,000 - $74,999</td>
<td>22.6%</td>
<td>***</td>
<td>9.5%</td>
<td>***</td>
</tr>
<tr>
<td>$75,000 - $99,999</td>
<td>23.5%</td>
<td>***</td>
<td>12.3%</td>
<td>***</td>
</tr>
<tr>
<td>$100,000 - $149,999</td>
<td>23.1%</td>
<td>***</td>
<td>8.6%</td>
<td>***</td>
</tr>
<tr>
<td>$150,000 - $199,999</td>
<td>20.1%</td>
<td>***</td>
<td>10.4%</td>
<td>***</td>
</tr>
<tr>
<td>$200,000+</td>
<td>26.1%</td>
<td>***</td>
<td>5.2%</td>
<td>***</td>
</tr>
</tbody>
</table>

Discrimination and Acculturation

<table>
<thead>
<tr>
<th>Frequency treated w/ less respect</th>
<th>Depression</th>
<th>Sig</th>
<th>Anxiety</th>
<th>Sig</th>
</tr>
</thead>
<tbody>
<tr>
<td>Never</td>
<td>9.3%</td>
<td>N/A</td>
<td>2.9%</td>
<td>N/A</td>
</tr>
<tr>
<td>&lt; 1 Time per Year</td>
<td>12.9%</td>
<td>***</td>
<td>4.9%</td>
<td>***</td>
</tr>
<tr>
<td>Few Times per Year</td>
<td>15.0%</td>
<td>***</td>
<td>5.9%</td>
<td>***</td>
</tr>
<tr>
<td>Few Times a Month</td>
<td>16.6%</td>
<td>***</td>
<td>5.2%</td>
<td>***</td>
</tr>
<tr>
<td>At Least Once a Week</td>
<td>26.4%</td>
<td>***</td>
<td>7.8%</td>
<td>***</td>
</tr>
<tr>
<td>Almost Everyday</td>
<td>20.7%</td>
<td>***</td>
<td>7.2%</td>
<td>***</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Frequency threatened/harassed</th>
<th>Depression</th>
<th>Sig</th>
<th>Anxiety</th>
<th>Sig</th>
</tr>
</thead>
<tbody>
<tr>
<td>Never</td>
<td>10.4%</td>
<td>N/A</td>
<td>3.6%</td>
<td>N/A</td>
</tr>
<tr>
<td>&lt; 1 Time per Year</td>
<td>15.3%</td>
<td>***</td>
<td>5.7%</td>
<td>***</td>
</tr>
<tr>
<td>Few Times per Year</td>
<td>23.9%</td>
<td>***</td>
<td>7.6%</td>
<td>***</td>
</tr>
<tr>
<td>Few Times a Month</td>
<td>27.3%</td>
<td>***</td>
<td>8.0%</td>
<td>***</td>
</tr>
<tr>
<td>At Least Once a Week</td>
<td>26.4%</td>
<td>***</td>
<td>12.8%</td>
<td>***</td>
</tr>
<tr>
<td>Almost Everyday</td>
<td>24.6%</td>
<td>***</td>
<td>11.1%</td>
<td>***</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Frequency called names/insulted</th>
<th>Depression</th>
<th>Sig</th>
<th>Anxiety</th>
<th>Sig</th>
</tr>
</thead>
<tbody>
<tr>
<td>Never</td>
<td>10.4%</td>
<td>N/A</td>
<td>3.8%</td>
<td>N/A</td>
</tr>
<tr>
<td>&lt; 1 Time per Year</td>
<td>13.6%</td>
<td>***</td>
<td>5.0%</td>
<td>***</td>
</tr>
<tr>
<td>Few Times per Year</td>
<td>19.0%</td>
<td>***</td>
<td>5.9%</td>
<td>***</td>
</tr>
<tr>
<td>Few Times a Month</td>
<td>20.6%</td>
<td>***</td>
<td>3.3%</td>
<td>***</td>
</tr>
<tr>
<td>At Least Once a Week</td>
<td>19.5%</td>
<td>***</td>
<td>14.7%</td>
<td>***</td>
</tr>
<tr>
<td>Almost Everyday</td>
<td>25.2%</td>
<td>***</td>
<td>7.9%</td>
<td>***</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>People act like you are dishonest</th>
<th>Depression</th>
<th>Sig</th>
<th>Anxiety</th>
<th>Sig</th>
</tr>
</thead>
<tbody>
<tr>
<td>Never</td>
<td>11.2%</td>
<td>N/A</td>
<td>4.1%</td>
<td>N/A</td>
</tr>
<tr>
<td>&lt; 1 Time per Year</td>
<td>14.0%</td>
<td>***</td>
<td>5.2%</td>
<td>***</td>
</tr>
<tr>
<td>Few Times per Year</td>
<td>16.1%</td>
<td>***</td>
<td>4.7%</td>
<td>***</td>
</tr>
<tr>
<td>Few Times a Month</td>
<td>17.4%</td>
<td>***</td>
<td>5.3%</td>
<td>***</td>
</tr>
<tr>
<td>At Least Once a Week</td>
<td>18.8%</td>
<td>***</td>
<td>5.9%</td>
<td>***</td>
</tr>
<tr>
<td>Almost Everyday</td>
<td>17.9%</td>
<td>***</td>
<td>6.6%</td>
<td>***</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>People act like you are not smart</th>
<th>Depression</th>
<th>Sig</th>
<th>Anxiety</th>
<th>Sig</th>
</tr>
</thead>
<tbody>
<tr>
<td>Never</td>
<td>9.9%</td>
<td>N/A</td>
<td>3.3%</td>
<td>N/A</td>
</tr>
<tr>
<td>&lt; 1 Time per Year</td>
<td>13.5%</td>
<td>***</td>
<td>5.5%</td>
<td>***</td>
</tr>
<tr>
<td>Few Times per Year</td>
<td>14.6%</td>
<td>***</td>
<td>4.7%</td>
<td>***</td>
</tr>
</tbody>
</table>
Table 5 Continued
Bivariate Analysis for Depression and Anxiety (n = 209,500,125)

<table>
<thead>
<tr>
<th></th>
<th>Depression</th>
<th>Sig</th>
<th>Anxiety</th>
<th>Sig</th>
</tr>
</thead>
<tbody>
<tr>
<td>Few Times a Month</td>
<td>13.8%</td>
<td>***</td>
<td>5.3%</td>
<td>***</td>
</tr>
<tr>
<td>At Least Once a Week</td>
<td>24.2%</td>
<td>***</td>
<td>5.4%</td>
<td>***</td>
</tr>
<tr>
<td>Almost Everyday</td>
<td>22.2%</td>
<td>***</td>
<td>8.9%</td>
<td>***</td>
</tr>
<tr>
<td>Challenges due to English Proficiency</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>9.4%</td>
<td>N/A</td>
<td>3.2%</td>
<td>N/A</td>
</tr>
<tr>
<td>Yes</td>
<td>11.9%</td>
<td>***</td>
<td>3.4%</td>
<td>***</td>
</tr>
<tr>
<td>Health Lifestyles</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DSM-IV Alcohol Abuse</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>14.4%</td>
<td>N/A</td>
<td>6.4%</td>
<td>N/A</td>
</tr>
<tr>
<td>Yes</td>
<td>30.2%</td>
<td>***</td>
<td>14.8%</td>
<td>***</td>
</tr>
<tr>
<td>Currently Smoke</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>9.5%</td>
<td>N/A</td>
<td>3.8%</td>
<td>N/A</td>
</tr>
<tr>
<td>Yes</td>
<td>13.0%</td>
<td>***</td>
<td>6.6%</td>
<td>***</td>
</tr>
</tbody>
</table>

N/A: Not Applicable; NS: Not Significant; *p<.05; **p<.01; ***p<.001

4. Nativity and Race/Ethnicity as Compared to Depression and Anxiety Correlates

Deviating from the prior section’s use of the CPES Short Weight, this section ran the interaction term of nativity with race/ethnicity by depression and anxiety unweighted. This was done to test for hypotheses that include both nativity and ethnicity in their conditions. As in the prior bivariate analysis section, when weighted, all the interactions appeared significant at the .001 level. However, in the prior section, even unweighted, the correlations were significant. In this section, where an interaction term is used, leaving the data unweighted provides valuable insight into the raw relationships between variables.

In Table 6 below, support is not found for Hypothesis 6A: American-born Blacks will be diagnosed with having depression more frequently than American-born Whites and Hypothesis 6B: American-born Blacks will be diagnosed as having anxiety more frequently than American-born Whites. Interesting, a significant difference at the .001
level existed both in terms of rates of depression and anxiety; however, these differences showed that American-born Blacks had LOWER rates of depression and anxiety as compared to American-born Whites, the opposite of what is suggested from the reviewed literature on discrimination, ethnicity, and mental health.

Support for Hypothesis 6C was slightly mixed, with more support for it than not: *Asians will be less likely than American-born Whites to have a diagnosis of depression.* Although, foreign born Asians had a significantly lower rate of depression as compared to American-born Whites supporting the hypothesis, American-born Asians’ rate of depression was not statistically different than that of American-born Whites. As to anxiety, foreign-born Asians and American-born Asians both had significantly lower rates as compared to American-born Whites, supporting the hypothesis.

Hypothesis 7 reads: *All immigrant groups will exhibit better mental health outcomes than their non-immigrant counterparts,* and sub-hypothesis 7a is: *Immigrants will have lower odds of being diagnosed as having a mental illness than those of the same ethnicity born in the United States.* As to rates of depression and anxiety, support was not statistically found to substantiate this claim. The Significance 2A and 2B columns in Table 6 compared immigrants to their non-immigrant counterparts. The only statistically significant relationship was between immigrant and non-immigrant Afro-Caribbeans in rates of depression; this occurred at the .05 level. No statistically significant relationships were found reviewing anxiety. However, it may be valuable to note that rates of depression and anxiety in immigrant communities as compared to their non-immigrant counterparts were consistently lower, except in the case of anxiety in Hispanics where the rates appeared to be the same. Furthermore, if the CPES Short Weight was applied to this
data, these relationships became highly significant. Thus, although the unweighted data did not support this hypothesis statistically, directionality indicates trend support for this hypothesis.

In addition to the overall trend hypothesized, Hypothesis 7B states that Asian immigrants will be the least likely group to be diagnosed with a mental illness. Support for this hypothesis was not found. Although, Asian immigrants had nearly the lowest rates of depression at 8% and anxiety at 2%, they did not solely hold the lowest rate across all groups and both mental health outcomes. In terms of depression, foreign-born Afro-Caribbean had the lowest rate of depression at 7%. For anxiety, there was a three way tie for the lowest rate at about 2% between Asian immigrants, Afro-Caribbean immigrants, and Black immigrants. Thus, immigrants exhibited the lowest rates of depression and anxiety as compared to American-born White, but Asians did not necessarily have the lowest rates of depression and anxiety.

In Table 6 four significance columns were provided, two per each mental health outcome – depression and anxiety. The first column for each (Significance 1A or Significance 2A) used American born Whites as the reference category to compare all other group to. The second column (Significance 1B or Significance 2B) used the American born group within an ethnicity or race as the comparison. Thus, whites did not have significance values, because only American born Whites were available in this dataset, and the difference in rates of depression between foreign born Asians and American born Asians is not significant.
### Table 6
Interaction Between Nativity and Race/Ethnicity by Mental Health Outcomes (n = 17,241)

<table>
<thead>
<tr>
<th>Interaction Term</th>
<th>Depression</th>
<th></th>
<th></th>
<th></th>
<th>Anxiety</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>%</td>
<td>SD</td>
<td>Sig 1A</td>
<td>Sig 2A</td>
<td>%</td>
<td>SD</td>
<td>Sig 1B</td>
<td>Sig 2B</td>
</tr>
<tr>
<td>White, American Born</td>
<td>18%</td>
<td>0.38</td>
<td>REF</td>
<td>NA</td>
<td>9%</td>
<td>0.28</td>
<td>REF</td>
<td>NA</td>
</tr>
<tr>
<td>White, Foreign Born</td>
<td>19%</td>
<td>0.4</td>
<td>NS</td>
<td>NA</td>
<td>12%</td>
<td>0.32</td>
<td>NS</td>
<td>NA</td>
</tr>
<tr>
<td>Asian, American Born</td>
<td>13%</td>
<td>0.34</td>
<td>NS</td>
<td>REF</td>
<td>3%</td>
<td>0.16</td>
<td>***</td>
<td>REF</td>
</tr>
<tr>
<td>Asian, Foreign Born</td>
<td>8%</td>
<td>0.27</td>
<td>***</td>
<td>NS</td>
<td>2%</td>
<td>0.15</td>
<td>***</td>
<td>NS</td>
</tr>
<tr>
<td>Hispanic, American Born</td>
<td>17%</td>
<td>0.38</td>
<td>NS</td>
<td>REF</td>
<td>6%</td>
<td>0.23</td>
<td>**</td>
<td>REF</td>
</tr>
<tr>
<td>Hispanic, Foreign Born</td>
<td>14%</td>
<td>0.35</td>
<td>NS</td>
<td>NS</td>
<td>6%</td>
<td>0.24</td>
<td>*</td>
<td>NS</td>
</tr>
<tr>
<td>Afro-Caribbean, American Born</td>
<td>16%</td>
<td>0.37</td>
<td>NS</td>
<td>REF</td>
<td>5%</td>
<td>0.21</td>
<td>NS</td>
<td>REF</td>
</tr>
<tr>
<td>Afro-Caribbean, Foreign Born</td>
<td>7%</td>
<td>0.25</td>
<td>***</td>
<td>*</td>
<td>2%</td>
<td>0.15</td>
<td>***</td>
<td>NS</td>
</tr>
<tr>
<td>Black, American Born</td>
<td>11%</td>
<td>0.31</td>
<td>***</td>
<td>REF</td>
<td>5%</td>
<td>0.22</td>
<td>***</td>
<td>REF</td>
</tr>
<tr>
<td>Black, Foreign Born</td>
<td>14%</td>
<td>0.35</td>
<td>NS</td>
<td>NS</td>
<td>2%</td>
<td>0.15</td>
<td>NS</td>
<td>NS</td>
</tr>
</tbody>
</table>

REF: Reference Group, NA: Not Applicable; NS: Not Significant; *p<.05; **p<.01; ***p<.001
5. Multivariate Analysis of Factors associated with Depression and Anxiety

A. Background

For the multivariate portion of this analysis, five models were examined. Model 1 included race/ethnicity and nativity; Model 2 added socio-demographic variables. Model 3 added socio-economic variables. Model 4 added health lifestyles behaviors. Finally, Model 5 included discrimination and acculturation variables. Measures were modeled in this fashion based upon prior theoretical discussion. Race/Ethnicity and nativity were included in Model 1 due to their central role in both the theoretical discussion and the hypotheses to be tested. Socio-demographic variables were entered in Model 2, since their grouped effects have been documented in the literature reviewed earlier in this dissertation. Socio-economic variables were added next, because of their prominent role in sociological research and ability to act in compliment to socio-demographic factors. Health lifestyles measures were entered in Model 4, since these variables are known to be correlated with socio-economic and socio-demographic measures entered in previous models. Finally, Model 5 included the last group of variables representing discrimination and acculturation. Assuming their effect is as strong as was seen in the bivariate section, they should have had a notable effect on the overall performance of the overall model, which is why their placement last is justified.

Prior to running logistic regression, imputation occurred to minimize lost cases. The initial data set began with 20,013 records. Since individuals’ race, mental health status (depressed or anxious), and nativity were central to this analysis, records where this data was missing were removed all together. Thus, with the elimination of records missing race, the data set n dropped to 19,729. It further dropped with the exclusion of
records missing depression or anxiety measures, to 19,536 and then to 19,531. Finally, cases were removed with nativity missing, creating a final sample size of 17,241. No additional attrition occurred from the socio-demographic or socio-economic measures, once the cases with missing data in the race/ethnicity, depression, anxiety, and nativity were removed. Then, the remaining data’s missing fields, specifically those pertaining to acculturation and discrimination were imputed. This was done because logistic regression required all elements in a record to be populated. If data elements were missing, the entire record was removed from the analysis. Imputation ensured that the n = 17,241 for this part of the analysis. To minimize the risk of flattening the data, or eliminating effects, the means of a variable were calculated by race/ethnicity group then applied to the appropriate data. In all cases, imputed values did not match back to a specific categorical value (e.g. 1 = Never or 5 = Almost Daily) rather they were simply a number reflecting the average (e.g. 1.11 or 3.19).

Two iterations of logistic regression were run, 1. Using the entire data set defined in this section for depression, and 2. Using the entire data set defined in this section for anxiety. All variables except race were entered as incremental variables; race was indicated as categorical to provide coefficients for each reporting category.

B. Logistic Regression on the Full Sample, Depression as Dependent (n = 17,241)

In general support of the Healthy Migrant Theory, nativity remained significant at the .001 level across all five models. The pattern being, regardless of the inclusion of other factors believed to impact mental health outcomes, nativity continued to be a statistically significant contributor to depression. Furthermore, Asians and Afro-
Caribbeans were statistically significantly more likely to be depressed, but being Black or Hispanic did not contribute statistically to the model when other measures are included. The socio-demographic variables of sex and age were strong predictors of depression regardless of what additional measures are included; females were more likely to be depressed and their rate of depression was higher than that found in males. Additionally, the way the data were entered with the youngest group being the reference group, those in age groups older than the reference group (18-28 years) were less likely to be depressed providing support for Hypothesis 2. Surprisingly, socio-economic measures were not as predictable. Income did not play a significant role in the prediction of depression, and education became more and more meaningful as other measures were included. In the first iteration of its inclusion, in Model 3, it was significant at the .05 level. In Model 4, it is significant at the .01 level, and in the final model, Model 5, it is significant at the .001 level.

The health lifestyles measures also provided interesting insight. Their first entrance occurs in Model 4, where smoking was significant at the .05 level, and alcohol abuse was significant at the highest level. With the inclusion of the discrimination and acculturation measures, smoking became non-significant, but alcohol abuse remained significant at the .001 level. The final model, Model 5 included discrimination and acculturation measures, some of which had an impact on depression while others do not. The more frequently respondents were treated disrespectfully and when respondents thought they were perceived as being unintelligent contributed to the overall model significantly at the .01 level. English proficiency and frequently being called names were also significant, but at a lower level - .05. Being threatened or being thought of as
dishonest were not found to be statistically significant and did not significantly contribute to the overall explanation power of the model.

The Nagelkerke $R^2$ reported in Table 7 reflected the amount of variance explained by the measures in the model. The first model, which only included race and nativity, explained about 4%, and the final model, which included all the variables via step-wise processing over doubled the explanation power to about 9%. All the models were found to be significant except for Model 3, which added socio-economic measures to race, nativity, and socio-demographic measures, but did not yet include health lifestyle variables or those reflecting discrimination or acculturation.
Table 7
Logistic Regression on the Full Sample (n = 17,241), Depression Dependent Variable

<table>
<thead>
<tr>
<th>Variables</th>
<th>Odds Ratio (B)</th>
<th>Odds Ratio (B)</th>
<th>Odds Ratio (B)</th>
<th>Odds Ratio (B)</th>
<th>Odds Ratio (B)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Model 1</td>
<td>Model 2</td>
<td>Model 3</td>
<td>Model 4</td>
<td>Model 5</td>
</tr>
<tr>
<td><strong>Race, Ethnicity, Nativity</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nativity</td>
<td>0.632***</td>
<td>0.659***</td>
<td>0.664***</td>
<td>0.727***</td>
<td>0.763***</td>
</tr>
<tr>
<td></td>
<td>(-0.459)</td>
<td>(-0.416)</td>
<td>(-0.410)</td>
<td>(-0.318)</td>
<td>(-0.271)</td>
</tr>
<tr>
<td>Race (Reference = Whites)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Asian</td>
<td>2.190***</td>
<td>2.383***</td>
<td>2.328***</td>
<td>2.229***</td>
<td>2.418***</td>
</tr>
<tr>
<td></td>
<td>(0.784)</td>
<td>(0.869)</td>
<td>(0.845)</td>
<td>(0.802)</td>
<td>(0.883)</td>
</tr>
<tr>
<td>Hispanic</td>
<td>1.095</td>
<td>1.115</td>
<td>1.072</td>
<td>1.060</td>
<td>1.118</td>
</tr>
<tr>
<td></td>
<td>(0.091)</td>
<td>(0.109)</td>
<td>(0.070)</td>
<td>(0.058)</td>
<td>(0.111)</td>
</tr>
<tr>
<td>Afro-Caribbean</td>
<td>1.888***</td>
<td>1.895***</td>
<td>1.898***</td>
<td>1.820***</td>
<td>1.984***</td>
</tr>
<tr>
<td></td>
<td>(0.636)</td>
<td>(0.639)</td>
<td>(0.641)</td>
<td>(0.599)</td>
<td>(0.685)</td>
</tr>
<tr>
<td>Black</td>
<td>1.017</td>
<td>0.986</td>
<td>0.966</td>
<td>0.981</td>
<td>0.957</td>
</tr>
<tr>
<td></td>
<td>(0.017)</td>
<td>(0.014)</td>
<td>(-0.034)</td>
<td>(-0.019)</td>
<td>(-0.114)</td>
</tr>
<tr>
<td><strong>Socio-demographics</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>----</td>
<td>1.792***</td>
<td>1.791***</td>
<td>1.998***</td>
<td>2.038***</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.583)</td>
<td>(0.583)</td>
<td>(0.692)</td>
<td>(0.712)</td>
</tr>
<tr>
<td>Age</td>
<td>----</td>
<td>0.992***</td>
<td>0.992***</td>
<td>0.994***</td>
<td>0.995***</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(-0.008)</td>
<td>(-0.008)</td>
<td>(-0.007)</td>
<td>(-0.005)</td>
</tr>
<tr>
<td><strong>Socio-economic</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Education</td>
<td>----</td>
<td>----</td>
<td>1.052*</td>
<td>1.072**</td>
<td>1.077***</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>(0.050)</td>
<td>(0.069)</td>
<td>(0.074)</td>
</tr>
<tr>
<td>Income</td>
<td>----</td>
<td>----</td>
<td>1.000</td>
<td>1.000</td>
<td>1.000</td>
</tr>
</tbody>
</table>
### Table 7 Continued:
Logistic Regression on the Full Sample (n = 17,241), Depression Dependent Variable

<table>
<thead>
<tr>
<th>Variables</th>
<th>Odds Ratio (B) Model 1</th>
<th>Odds Ratio (B) Model 2</th>
<th>Odds Ratio (B) Model 3</th>
<th>Odds Ratio (B) Model 4</th>
<th>Odds Ratio (B) Model 5</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Health Lifestyles</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alcohol Abuse</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>2.309***</td>
<td>2.245***</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(0.837)</td>
<td>(0.809)</td>
</tr>
<tr>
<td>Smoking</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>1.381*</td>
<td>1.301</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(0.323)</td>
<td>(0.263)</td>
</tr>
<tr>
<td><strong>Discrimination and Acculturation</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Frequency treated with less respect</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>1.095**</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(0.091)</td>
</tr>
<tr>
<td>Frequency threatened</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>1.082</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(0.079)</td>
</tr>
<tr>
<td>Frequency called names</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>1.084*</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(0.080)</td>
</tr>
<tr>
<td>People act like you are dishonest</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>0.996</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(-0.004)</td>
</tr>
<tr>
<td>People act as though you are not smart</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>1.081**</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(0.078)</td>
</tr>
<tr>
<td>Lack of English proficiency</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>1.276*</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(0.244)</td>
</tr>
<tr>
<td><strong>Block Chi-Square</strong></td>
<td>419.372***</td>
<td>208.284***</td>
<td>5.750</td>
<td>162.558***</td>
<td>96.118***</td>
</tr>
<tr>
<td><strong>Nagelkerke R²</strong></td>
<td>.041</td>
<td>.061</td>
<td>.062</td>
<td>.08</td>
<td>.09</td>
</tr>
</tbody>
</table>

*p<.05; **p<.01; ***p<.001
C. Logistic Regression on the Full Sample, Anxiety as Dependent (n = 17,241)

Nativity, as a determinant of health outcomes, as proposed in the Healthy Migrant Theory, was not supported in any of the models (see Table 8). Furthermore, race appeared to have a mixed role. All race/ethnicity categories were found to be significant; however, the level of significance fluctuated depending on the additional measures included in the models. Asian and Afro-Caribbeans had higher odds ratios while Blacks and Hispanics had lower ones compared to Whites. The socio-demographic variable of sex was a strong predictor of anxiety regardless of what additional measures were included. However, age only became significant in the final model with the addition of the discrimination measures and only marginally so. The discrimination measures shifted the strength of some of the coefficients increasing some while decreasing others; because age was apparently on the border of significance, the inclusion of the discrimination measures tipped the balance in such a way as to make it significant or increase its influence on anxiety, with older individuals being more likely than younger ones to have anxiety (the opposite of what was found with depression). This, in turn, minimized the impact of the health lifestyle measures. In terms of socio-economic status, both income and education played a significant role in the prediction of anxiety; however the since the education odds ratio was greater than 1, the results implied that the more educated the individual the more likely to have anxiety.

The health lifestyles measures were included in Model 4, where smoking was significant at the .01 level with the smokers more likely to be anxious, and alcohol abuse was significant at the highest level; alcohol abusers were more likely to have anxiety. With the inclusion of the discrimination and acculturation measures, both remained
significant. The final model, Model 5 included discrimination and acculturation measures, some of which had an impact on depression while others did not. However, all the discrimination and acculturation odds ratios were close to 1 ranging from 0.951 to 1.220. The more frequently respondents were threatened contributed to the overall model significantly at the .001 level, and the frequency that respondents were disrespected and the frequency that respondents were thought of as unintelligent were also significant, but at a lower level - .05. Being called names, being thought of as dishonest, and being unable to speak English were not found to be statistically significant and did not significantly contribute to the overall explanation power of the model.

The Nagelkerke $R^2$ being reported in Table 8 reflected the amount of variance explained by the measures in the model. The first model, which only included race and nativity, explained about 4%, and the final model, which included all the variables via step-wise processing over doubled the explanation power to about 9%. Two large jumps occurred in the explanatory power of the overall model. The first was with the inclusion of socio-demographics in Model 2 which took the explanatory power from 4.2% to 5.8%, and the second notable jump occurred with the addition of the health lifestyles measures in Model 4, which took the explanatory power from 6.1% to 7.8%. All the models, unlike with depression, were found to be significant.
Table 8
Logistic Regression on the Full Sample (n = 17,241), Anxiety Dependent Variable

<table>
<thead>
<tr>
<th>Variables</th>
<th>Odds Ratio (B) Model 1</th>
<th>Odds Ratio (B) Model 2</th>
<th>Odds Ratio (B) Model 3</th>
<th>Odds Ratio (B) Model 4</th>
<th>Odds Ratio (B) Model 5</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Race, Ethnicity, Nativity</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nativity</td>
<td>0.863 (-0.147)</td>
<td>0.865 (-0.145)</td>
<td>0.858 (-0.153)</td>
<td>0.963 (-0.038)</td>
<td>1.018 (0.017)</td>
</tr>
<tr>
<td><strong>Race (Reference = Whites)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Asian</td>
<td>2.227*** (0.801)</td>
<td>2.362*** (0.860)</td>
<td>2.477*** (0.907)</td>
<td>2.397*** (0.874)</td>
<td>2.567*** (0.943)</td>
</tr>
<tr>
<td>Hispanic</td>
<td>0.521*** (-0.652)</td>
<td>0.558** (-0.583)</td>
<td>0.601** (-0.509)</td>
<td>0.605** (-0.502)</td>
<td>0.639* (-0.448)</td>
</tr>
<tr>
<td>Afro-Caribbean</td>
<td>1.294* (0.258)</td>
<td>1.361** (0.308)</td>
<td>1.432** (0.359)</td>
<td>1.376** (0.319)</td>
<td>1.499** (0.405)</td>
</tr>
<tr>
<td>Black</td>
<td>0.590** (-0.528)</td>
<td>0.598** (-0.514)</td>
<td>0.603** (-0.506)</td>
<td>0.641* (-0.445)</td>
<td>0.620* (-0.478)</td>
</tr>
<tr>
<td><strong>Socio-demographics</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>----</td>
<td>1.996*** (0.691)</td>
<td>1.937*** (0.661)</td>
<td>2.218*** (0.797)</td>
<td>2.250*** (0.811)</td>
</tr>
<tr>
<td>Age</td>
<td>----</td>
<td>1.000</td>
<td>1.001</td>
<td>1.003</td>
<td>1.004* (0.003)</td>
</tr>
<tr>
<td><strong>Socio-economic</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Education</td>
<td>----</td>
<td>----</td>
<td>1.079* (0.076)</td>
<td>1.106** (0.100)</td>
<td>1.110** (0.104)</td>
</tr>
<tr>
<td>Income</td>
<td>----</td>
<td>----</td>
<td>1.000*** (0.001)</td>
<td>1.000*** (0.003)</td>
<td>1.000** (0.004)</td>
</tr>
</tbody>
</table>
### Table 8 Continued:
Logistic Regression on the Full Sample (n = 17,241), Anxiety Dependent Variable

<table>
<thead>
<tr>
<th>Variables</th>
<th>Odds Ratio (B) Model 1</th>
<th>Odds Ratio (B) Model 2</th>
<th>Odds Ratio (B) Model 3</th>
<th>Odds Ratio (B) Model 4</th>
<th>Odds Ratio (B) Model 5</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Health Lifestyles</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alcohol Abuse</td>
<td>----</td>
<td>----</td>
<td>----</td>
<td>2.584***</td>
<td>2.517***</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(0.949)</td>
<td>(0.923)</td>
</tr>
<tr>
<td>Smoking</td>
<td>----</td>
<td>----</td>
<td>----</td>
<td>2.214**</td>
<td>2.016**</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(0.795)</td>
<td>(0.701)</td>
</tr>
<tr>
<td><strong>Discrimination and Acculturation</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Frequency treated with less respect</td>
<td>----</td>
<td>----</td>
<td>----</td>
<td>----</td>
<td>1.094*</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(0.090)</td>
</tr>
<tr>
<td>Frequency threatened</td>
<td>----</td>
<td>----</td>
<td>----</td>
<td>----</td>
<td>1.186**</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(0.170)</td>
</tr>
<tr>
<td>Frequency called names</td>
<td>----</td>
<td>----</td>
<td>----</td>
<td>----</td>
<td>1.058</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(0.056)</td>
</tr>
<tr>
<td>People act like you are dishonest</td>
<td>----</td>
<td>----</td>
<td>----</td>
<td>----</td>
<td>0.951</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(-0.050)</td>
</tr>
<tr>
<td>People act as though you are not smart</td>
<td>----</td>
<td>----</td>
<td>----</td>
<td>----</td>
<td>1.096*</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(0.092)</td>
</tr>
<tr>
<td>Lack of English proficiency</td>
<td>----</td>
<td>----</td>
<td>----</td>
<td>----</td>
<td>1.220</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(0.199)</td>
</tr>
<tr>
<td><strong>Block Chi-Square</strong></td>
<td>285.730***</td>
<td>113.244***</td>
<td>18.275***</td>
<td>119.548***</td>
<td>55.974***</td>
</tr>
<tr>
<td><strong>Nagelkerke R²</strong></td>
<td>0.042</td>
<td>0.058</td>
<td>0.061</td>
<td>0.078</td>
<td>0.086</td>
</tr>
</tbody>
</table>

*p<.05; **p<.01; ***p<.00
CHAPTER FIVE

DISCUSSION

A. Theoretical Recap

The purpose of this study was to examine factors associated with mental health outcomes for minority groups residing in the United States, with an emphasis on racial and ethnic minorities and further segmentation between those born in the United States and those born outside the United States using the Healthy Migrant Theory and Health Lifestyles Theory. Specific groups analyzed were Whites, Blacks, Asians, Hispanics, and Afro-Caribbeans.

As mentioned in the opening chapter, this topic is important, especially, in the way examined herein, because racial and ethnic minority groups comprise a sizable and growing segment of the overall U.S. population (U.S. Census Bureau 2000; U.S. Census Bureau 2008). Furthermore, these groups tend to have different rates of mental illness as compared to the majority, White, American-born population (Morales et al. 2007; Kennedy et al. 2006), and their cultural background and migration experience influences these rates (Finch et al. 2000; Redfield et al. 1936).

Thus, this research project leveraged the Healthy Migrant Theory, which posits that immigrants are healthier than both Whites and American-born minorities (Spiegel and Yassi 2004; Morales et al. 2007; Scribner 1996; Perez 2002). The HMT offers two
main explanations for a health paradox, a selection bias and the salmon effect. Within the selection bias argument, education, income, age, gender, physical health, and mental health play a role (Lechner and Mielck 1998; Rumbaut and Weeks, 1996; Wingate and Alexander 2006). Additionally, some work on the HMT speaks about exposure to discrimination and the process of acculturation’s effect on health outcomes, potentially ameliorating the health benefit (Ortega et al. 2000; Mossakowski 2003) with discrimination being defined as the negative effect felt by one group due to their minority status (Finch et al. 2000; Jackson et al. 1998).

However, because the HMT has general limitations, has not been extensively used in sociology, and did not account for known lifestyle behaviors, Health Lifestyles theory was included to inform this project as well. Health lifestyles are “collective patterns of health-related behavior based on choices from options available to people according to their life chances” (Cockerham 2000, 1314). This theory uses habitus, group’s persona, preferences, and dispositions as a result of structural influences and agency driven processes, as its foundation. Additionally, Gibson’s Affordance Theory compliments Bourdieu’s conceptualization of habitus, suggesting how environment would guide but not determine practice then subsequently connect this practice with perception and beliefs – particularly the internalization of discrimination. (Gibson 1986).

By its inclusion in this research project to inform measure selection, smoking behavior and alcohol abuse were added as explanatory variables.
B. Empirical Discussion

Hypotheses were tested using bivariate (using weighted data) and multivariate (using unweighted data) analyses, specifically logistic regression, within which five models were included in a stepwise fashion. The first included nativity and race/ethnicity, both of which were central to the HMT. The second included socio-demographics, followed by socio-economic measures (education and income). The fourth model added health lifestyles measures, smoking status and alcohol abuse indicator. The final model included discrimination and acculturation measures.

Overall results were mixed, with some hypotheses had more support than others. See Table 9 for a summary of results.
Table 9
Summary of Hypotheses

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Supported?</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Regardless of race or ethnicity, women will have higher odds of having worse mental health, specifically depression and anxiety, than men.</td>
<td>Yes</td>
</tr>
<tr>
<td>2. Age will be correlated with rate of mental illness. Specifically, those younger than 50 will have higher odds of having a mental illness than those fifty and older.</td>
<td>Yes</td>
</tr>
<tr>
<td>3. Regardless of race or ethnicity, socioeconomic status will be correlated with rate of mental illness.</td>
<td>No</td>
</tr>
<tr>
<td>4. Excessive alcohol consumption will be correlated with an increase in negative mental health outcomes. Those who abuse alcohol will have higher odds of having depression or anxiety.</td>
<td>Yes</td>
</tr>
<tr>
<td>5. Smoking will be correlated with an increase in negative mental health outcomes. Those who smoke will have higher odds of having depression or anxiety.</td>
<td>Yes</td>
</tr>
<tr>
<td>6. Ethnicity will be correlated with rate of mental illness</td>
<td>Mixed</td>
</tr>
<tr>
<td>7. All immigrant groups will exhibit better mental health than their non-immigrant counterpart group.</td>
<td>Mixed</td>
</tr>
<tr>
<td>8. Acculturation will be correlated with diagnosis of mental illness. Those who exhibit higher rates of acculturation will have higher odds of being diagnosed as having mental illness.</td>
<td>Yes</td>
</tr>
<tr>
<td>9. Discrimination will be correlated with diagnosis of mental illness. Those who encounter discrimination will have higher odds of being diagnosed with a mental illness.</td>
<td>Yes</td>
</tr>
</tbody>
</table>
Hypothesis 1 stated that regardless of race or ethnicity, women would have worse mental health specifically depression and anxiety, than men. The bivariate analysis showed that, yes, indeed, gender was correlated with both depression and anxiety, and that women had a higher rate of depression (19.8% vs. 12.6%) and a higher rate of anxiety (9.5% vs. 5.1%) than men. Plus, both logistic regression models, one for depression and one for anxiety, indicated that gender was statistically significant in each step/block and the inclusion of socio-demographic measures (age and gender) improved the explanatory power of the equation. There was support for this hypothesis, and prior work citing the effects of gender on mental health outcomes was further substantiated (CDC 2008; CDC 2009; Robins 1991; Bauer et al. 2000). Although not extensively addressed in this dissertation, gender has been identified as a discriminatory factor and the effects of discrimination may have been encountered not simply because of one’s race or ethnicity (which is discussed thoroughly herein) but also due to one’s female status (Kessler et al. 2005; Ullmann et al. 2011). Gender is squarely placed within one of the assumptions of the Healthy Migrant Theory, wherein gender is believed to inform one’s immigration experience; thus its significance in this analysis provided support for not just this project but also for the theory.

Hypothesis 2 stated that age would be correlated with rate of mental illness. As mentioned above, the inclusion of socio-demographic measures – both age and sex - improved the explanatory power of the logistic regression models. Thus, support was seen at the multivariate level. In terms of the bivariate correlations, the results were mixed. The two highest rates of depression were found in 29-40 and those 41-50; the lowest rate was found in individuals seventy and older. The highest two rates of anxiety
spanned the two middle age groups, 41-50 and 51-59. The lowest rate of anxiety was still found in the oldest age group of 70+. However, this did not address the issues pertaining to age at the time of migration, specifically if an individual migrated prior to middle age how that affected the potential to develop a mental illness or how the salmon effect (return migration) may have influenced these statistics. Unfortunately, that level of detail was not discernible from this dataset.

The third hypothesis had two major elements that needed to be tested. The overall premise was that that regardless of race or ethnicity, socioeconomic status would be correlated with rate of mental illness. This was relevant, because some researchers found that lower income and lower levels of education attenuated the benefit of being an immigrant. Thus, lower education and lower income tended to be associated with poorer mental health outcomes particularly among Hispanic and Asian immigrants (Moscicki et al. 1989; Williams 2002). Those with lower levels of education would be more likely to suffer from depression or anxiety, and those with lower levels of income will be more likely to suffer from depression or anxiety. Although the data was found to have statistically significant relationships between depression and anxiety as compared to education and income categories, the opposite trend was supported. Those with lower levels of education or lower levels of income were found to exhibit lower rates of depression and anxiety. Therefore, no support for this group of hypotheses was found, but a question emerged as to if being an immigrant is so protective that education and income’s influence was significantly minimized providing support for the Healthy Migrant Theory but refuting the work of others.
Hypotheses 4 and 5 related to the health lifestyles and mental health outcomes literature. Hypothesis 4 suggested that high level of alcohol consumption and high rates of depression and anxiety would be correlated based on general statistics as well as on Health Lifestyles Theory (Cockerham 2005; Perez 2002; NIMH 2009). Hypothesis 5 suggested the same trend for smoking and mental health outcomes. Both these hypotheses were supported with statistical significance at the bivariate and multivariate levels. With NAMI having reported almost 40% of alcohol abusers had a mental illness (NAMI 2009, P3), Health Lifestyles Theory asserted that lifestyle choices and health behaviors drove health outcomes (Cockerham 2005), and the Healthy Migrant Theory stated that immigrants typically exhibited higher rates of alcohol consumption and cigarette smoking (Marsiglia 2011) which in turn would all affect mental health outcomes, it was not surprising that these hypotheses were supported.

The next set of hypotheses pertained to race/ethnicity and nativity. Testing for this occurred at the bivariate level, in some cases, using an interaction term of nativity with race/ethnicity. The overall premise of Hypothesis 6 was that ethnicity would be correlated with depression and anxiety, based upon the central reference to the Healthy Migrant Theory, where immigrants are believed to hold better health outcomes as compared to non-immigrants (Perez 2002, 89). Sub-hypotheses focused on the differences between American-born Blacks compared to American-born Whites, Asians compared to American-born Whites, and Hispanics compared to Whites. Support was not found for the idea that American-born Blacks would be diagnosed having depression and anxiety more frequently than American-born Whites. Support for the hypothesis that Asians would be less likely than American-born Whites to have a diagnosis of depression
was mixed. Although, foreign born Asians had a significantly lower rate of depression as compared to American-born Whites supporting the hypothesis, American-born Asians’ rate of depression was not statistically different than that of American-born Whites. Ortega et al. believed that acculturation (discussed in a few paragraphs) was associated with a greater risk of having any mental illness (2000, 728), and that those born in the United States are likely to be much more acculturated than their immigrant predecessors. But since the acculturation measure used in this analysis was very limited, a more thorough investigation of the impact of acculturation and nativity on American born minorities may prove insightful.

To extend the prior hypotheses on race/ethnicity and nativity, Hypothesis 7 suggested that all immigrant groups would exhibit better mental health outcomes than their non-immigrant counterparts. Support was not statistically found to substantiate this claim. The only statistically significant relationship that emerged was between immigrant and non-immigrant Afro-Caribbeans in rates of depression. No statistically significant relationships were found reviewing anxiety. However, rates of depression and anxiety in immigrant communities as compared to their non-immigrant counterparts were typically lower, just not statistically different, providing directional support for the Healthy Migrant Theory, but not statistically significant support. A sub-hypothesis stated that Asian immigrants would be the least likely group to be diagnosed with a mental illness. Support for this hypothesis was not found either. As to depression, foreign-born Afro-Caribbean had the lowest rate of depression at 7%. For anxiety, there was a three way tie for the lowest rate at about 2% between Asian immigrants, Afro-Caribbean immigrants, and Black immigrants.
The last two hypotheses focused on discrimination and acculturation. Mental health outcomes were found to be correlated with the acculturation measure used and the discrimination measures. As stated earlier, Discrimination is the negative effect felt by one group due to their minority status (Finch et al. 2000; Jackson et al. 1998), and that minority status may come from immigration status, gender, race, or ethnicity as examples. It was consistently found that those who routinely encountered discriminatory behaviors had higher rates of depression and anxiety as compared to those who rarely or never encountered discrimination. Discrimination may occur at various levels -- individual level or in large societal structures (Finch et al. 2000, 297), but this endeavor only measured discrimination in a self-reported fashion at the individual level. Even so, discrimination was a strong predictor of mental health outcomes. Also, those who had lower English proficiency had a statistically higher rate of depression than those who could speak English well; a statistically significant difference in rate of anxiety was not found. A lack of English proficiency, especially if one resides in a primarily English speaking neighborhood could lead to isolation and dependency challenges. In sum, results were mixed; however limitations of the data and theoretical framework may have led to false positives and unexpected results.

This analysis informs the body of literature on mental health outcomes by focusing on racial and ethnic minorities and subsequently finding that, depression and anxiety in these groups are related to experience with discrimination and health lifestyles behaviors. This has practical implications in terms of treatment and prevention.
C. Limitations

As in any research, limitations exist, both theoretically as well as statistically. Three main areas of limitations were addressed in this section, the first relating to the timing of this research project, the second pertaining to theoretical issues, and the last discussing quantitative issues and gaps. Limitations on all three areas were significant and could have affected the results reported herein.

Firstly, this project was undertaken in 2007. The Collaborative Psychiatric Epidemiology Surveys (CPES) was publicly released in 2007; however, the data was collected around 2000, making this data over a decade old. Over the last few years, immigration policies have become more stringent (e.g. HB56 in Alabama) affecting the way immigrants are perceived and treated. Furthermore, this project itself has been underway for five years. In this time, new literature has been released and more work has been done in this field. Although, the earlier chapters have been updated with more recent work, a full revision was not done. Also, the weight used (CPES Short Weight) in the bivariate analysis of this project to mirror data to the population is outdated, since the release of the U.S. Census 2010 population data. Thus, due to the timing of the start and completion of this project, the results may be affected.

There were also theoretical limitations. The HMT was formed using Canadian culture and their immigration landscape, not that of the United States. Also, there were cases where the HMT was found to not hold true, such as immigration in Sweden (Tinghög et al. 2007). There are also general gaps in the HMT; for example, it does not address the immigration pathway – legal or illegal, and the HMT fails to directly account for socioeconomic factors. Furthermore, the HMT hasn’t been fully embraced as a
sociological theory; although, its application has been cited in public health and some social science work.

Finally, there were a number of quantitative limitations. As mentioned earlier, the CPES Short weight reflected an out-of-date U.S. Census estimate. Also, this same weight, which adjusted the data for generalizability expanded the sample size from about 21,000 records to over two million records, increasing the statistical power to the extent that even the tiniest difference appeared to be statistically significant, at the .001 level no less. In addition to the challenges posed by the CPES short weight, there were other data issues. For example, since the CPES was a compilation of three datasets, slight differences in questions/verbiage caused them to be eliminated from the joint dataset. Although many measures were available, other desirable measures, such as neighborhood context, may have been in one or two of the datasets, but not in all three – thus, not included in the CPES. Another limitation was the way acculturation was included in this study. A lone measure, English proficiency, was used to measure acculturation. Acculturation was well documented as having an effect on mental health outcomes (Lara et al. 2005; Ortega et al. 2000; Mossakowski 2003), but it would have been valuable to have supplemental acculturation measures. Another empirical limitation derived from the use of logistic regression. To use logistic regression, data must have a complete record set. In order to make that occur, there was loss of data as well as the need to impute missing data to keep the sample size from becoming too small, especially with discrimination measures.
D. Future Research

Research focusing on mental health disparities can be found in abundance across many disciplines, but mental health research that spans all major racial and ethnic groups in the United States is less common. At the most basic level, more research should be done on this set of racial and ethnic minorities looking at other mental health outcomes, such as bi-polar disorder and schizophrenia. Another area would be to further expand on work relating to nativity as a precursor to depression and anxiety, since this project simply scratched the surface of potential differences between American-born minorities and minorities born in another country. This should be done with the intention to narrow into more applied topics, such as the impact of minorities with mental illnesses entering the U.S. health care system and the impact of discrimination driven mental illness on social dynamics in various environments. Expanding on discrimination, with the recent anti-immigrant Arizona and Alabama legislature, it may be interesting to perform a longitudinal study on the rate of depression and anxiety in racial and ethnic minorities residing in the United States pre- and post- the establishment of these laws.

Since there was strong support for gender being correlated with depression and anxiety, another step may be to create interaction terms with gender, nativity, and race/ethnicity to evaluate mental health outcomes when these measures are viewed in combination. Do the individual effects remain or do they dissipate? Another expansion may be to tease out discrimination due to gender from discrimination due to being a racial or ethnic minority to see if both or just one form of discrimination affects rates of depression and anxiety.
Although this research found a number of significant correlates with mental health outcomes, questions still exist over macro-level versus micro-level determinants. Makiko (2004) offered an analysis in which family attitudes were assessed to determine spatial location between very “traditional” and very egalitarian households in respect to opinions of both husband and wife. This in turn was used as a way to assess family structure. An analysis looking at mental health outcomes which included family structure in addition to race/ethnicity and nativity may prove very insightful, especially when trying to decipher what forces play the largest role in negative mental health outcomes. Also, in a general sense, performing an analysis of mental health outcomes of racial and ethnic minorities which includes social support and thereby (potentially) resilience, may yield interesting results. If it were to be found that immigrants had a higher level of resilience due to greater social support, maybe from family or from community, the Healthy Migrant Theory could be further expanded to include this input.

Since immigration is a global phenomenon, replicating the design of this research project (with appropriate adjustments to match the racial, ethnical, and social profile of said countries) in other countries has the potential to inform the mental health body of literature. This information may help countries that provide nationalized health care budget resources towards immigrant health and to understand social process that affect the rates of mental illness in their countries.

**E. Conclusion**

The present study reveals that depression and anxiety are influenced by race, gender, alcohol abuse, smoking behavior, and discrimination. These negative mental
health outcomes may also be affected by nativity, age, and acculturation, depending on how one asks the question and how support is defined. Income and education were correlated with depression and anxiety, but the opposite of what was hypothesized was supported. This study, to the knowledge of the researcher, was the first to apply the Healthy Migrant Theory and Health Lifestyles Theory, in combination, to mental health outcomes across such a wide set of racial and ethnic minorities.

There are some broader implications that arise from the findings of this study. Certain documented relationships that have been found in past research relating to socio-economic status (discussed in Chapters 1 and 2) did not appear in this project. While upon initial review, this appears to be simply a significant relationship in the opposite direction, important questions arise. Are the more educated more aware of mental illnesses, causing a self selection bias of sorts? What type of interaction occurs between education, race/ethnicity, and nativity? Questions remain, and hopefully, will be addressed in future research in the field.

Additionally, although mental health outcomes are of theoretical interest to help researchers understand the impact of macro forces on a growing group of individuals, this research and research like it may prove valuable to those seeking to convert research into practice. For example, since gender and English proficiency, regardless of race or ethnicity, influence the community rate of depression and anxiety, interventions may be developed to target minority communities of this background.

Although this study was not able to conclusively support all hypotheses, further research which includes more theoretically grounded measures, such as neighborhood context or secondary measures of acculturation, may be able to build off the foundation
laid by this work. It is the hope of this researcher that future work will be done on this topic to gain a better understanding of very complex processes leading to negative mental health outcomes in racial and ethnic minorities.
REFERENCES


Contribution of Socio-economic Status.” Social Science and Medicine, 62(10): 2469-2478.


National Alliance on Mental Illness. 2009. “Dual Diagnosis and Integrated Treatment of Mental Illness and Substance Abuse Disorder.” Retrieved on July 13, 2010 from


