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EXAMINATION OF THE MENTAL HEALTH AND FAMILY DYNAMICS IN
CARIBBEAN IMMIGRANTS USING THE NATIONAL SURVEY OF AMERICAN
LIFE

by

BRIAN D. CARTER

Under the direction of Frances A. McCarty

ABSTRACT

Previous studies have documented an association between mental illness rates and US-nativity, younger age at immigration, and recent immigration status among Caribbean immigrants to the US. This analysis examines these associations with the addition of important demographic controls and two indices of family support and conflict in Caribbean immigrants represented in the National Survey of American Life (n = 1623). The results indicate that previous correlates disappear when the index of family conflict is taken into account. Future efforts should focus on culturally appropriate identification and treatment methods addressing family dynamics in Caribbean immigrants.

INDEX WORDS: immigrant mental health, family dynamics, National Survey of American Life.

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LIFE

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B.A., GEORGIA STATE UNIVERSITY

M.A., GEORGIA STATE UNIVERSITY

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EXAMINATION OF MENTAL HEALTH AND FAMILY DYNAMICS IN
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For Desiree and Buddha

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Chapter I

Introduction

The understanding that mental health is at least as important as physical health has become a predominant theme in public health over the past two decades. The global burden of disease profiles published by Murray and Lopez (1996) found that the disability resulting from mental disorders accounted for more disease burden than cancer and HIV combined and nearly equivalent to cardiovascular and respiratory diseases. At the time of their research there were still not accurate estimates of mental disorders prevalences because there were very few nationally representative surveys in the US and those available were limited by diagnostic and methodological problems. Furthermore, these surveys failed to differentiate the burden of mental disorders in among minorities and rapidly growing immigrant populations, of whom little was known (J. S. Jackson, et al., 2004)

Researchers had long noticed interesting characteristics in the patterns of health problems in immigrant groups. Studies of Latinos living in the US consistently demonstrated that first generation immigrants had substantially better health than other Americans despite their generally poor socioeconomic conditions. These results were so striking and consistent that they have been labeled the 'Hispanic Paradox' (Crimmins, Kim, Alley, Karlamangia, & Seeman, 2007). Even more interesting was that these health benefits were not observed in the children and grandchildren of Latino immigrants; rather, the second and third generations have substantially poorer health indicators than

recent immigrants or any other social group after controlling for the usual factors including income, age, gender, marital status, and education. In many instances, these poor health outcomes are accentuated with economic achievement, acculturation level, English-language proficiency, and education. This *Hispanic Paradox* led researchers to study other immigrant groups and the findings were fairly generalizable, although to different extents. This paradox has been observed in Asian (Gould, Madan, Qin, & Chavez, 2003), Caribbean (Portes & Grosfoguel, 1994), and African (P. Jackson, 2005) communities living in the US.

Noting this effect across all immigrant populations, researchers asked whether the same would be observed in their mental health and discovered similar findings (Takeuchi, Alegria, Jackson, & Williams, 2007). Most of the work has focused on Latino immigrants because they are the largest and fastest growing minority group in the US (Camarota, 2002), but not as much work has been done concerning other immigrant groups. The National Survey of American Life (NSAL) (J. S. Jackson, et al., 2004) documented the mental health and possible correlates of Caribbean immigrants living in the US as part of the Community Psychiatric Epidemiology Surveys (ICPSR 2004), and the examination presented here augments the original exploratory studies with additional variables concerning family dynamics.

Many of the studies outlined in the next section have estimated the prevalences of mental disorders in immigrant populations, but little in the epidemiological literature focused on the family dynamics in these communities that may or may not form the basis of these results. The anthropological literature is ripe with examples of how immigrant groups adapt and form their identity when settling in a foreign culture, and this

perspective is useful in describing how changes in cultural values may affect family dynamics and, in turn, mental health.

The study presented here analyzed mental health outcomes in a sample of Caribbean immigrants previously examined by Williams et al. (2007) who noticed increased rates of depression, anxiety, and substance abuse associated with US-nativity, younger age at immigration, and recent immigration. This analysis replicates their results with the addition of some demographic factors including marital status, work status, and income, as well as two constructed variables describing family dynamics. Previous examinations have indicated that family dynamics are an important predictor of psychological wellbeing and this study hypothesizes that many of the associations discussed by Williams et al. will be reduced or eliminated with the addition of these two constructed variables of family support and family conflict.

Chapter II

Literature Review

Public health is concerned with reducing disease and disability in the population through preventative efforts within an environmental context. As compared to the medical model, public health is not as focused on traditional aspects of diagnosis and treatment; rather, understanding the broader epidemiology of disease can serve as a tool for prevention, health promotion, and more efficient delivery of health services to those most in need. In this instance, it is important for public health to accurately ascertain the distribution and burden of mental illness through a comprehensive epidemiological approach. Previous surveys have indicated that mental illness is a major cause of disability worldwide, in terms of personal impairment and its effect on productivity and consequences to physical health.

Mental disorders contribute about 6.2% of the nation's healthcare expenditures (Insel, 2008; World Health Organization, 2005), but this grossly underestimates the full economic costs of mental illness because unlike medical disorders, the costs of mental illness are more indirect than direct. Indirect costs incurred through reduced labor productivity and educational attainment are estimated at \$193.2 billion annually (R. Kessler, et al., 2008; Murray & Lopez, 1996). Mental illness is associated with a variety of comorbidities leading to higher utilization of health resources and early mortality (Colton & Manderscheid, 2006); for example, it is estimated that people with serious mental illness smoke 44% of all the cigarettes in the US (el-Guebaly, Cathcart, Currie,

Brown, & Gloster, 2002). Additionally, as many as 22% of individuals in jails and prisons have been diagnosed with some form of mental illness (James & Glaze, 2006).

The Global Disease Burden (GBD) study sought to provide a consistent estimate of incidence, prevalence, duration, and case-fatality for 107 conditions and their sequelae as a means of judging the state of population health (Murray & Lopez, 1996). The disease burden was summarized using the Disability Adjusted Life Year (DALY), an index described as a single year of healthy life lost to disease or disability. With the incorporation of disability into total disease burden, the GBD study discovered that mental disorders ranked nearly as high as cardiovascular and respiratory diseases, and higher than all cancers or HIV. This analysis has underscored the need for a broad public health perspective that valued mental health with the same importance as physical health (U.S. Department of Health and Human Services., 1999).

Assessing the prevalence of mental disorders in the US has been complicated by methodological and diagnostic problems. Before the 1980's, psychiatry lacked the systematic rigor required for large-scale surveys of mental health. The early diagnostic manuals made little effort to provide classification schemes; case in point is the prominent psychologist Karl Menninger who, working in the 1960s, understood that all mental illness could be reduced to the patient's inability to adequately adapt to his or her environment (Wilson, 1993). This resulted in a manner of treatment that was highly individualized and less focused on standardization and diagnosis. The first two editions of the Diagnostic and Statistical Manuals only included around 100 separate diagnoses compared to the 297 identified in the fourth edition (American Psychiatric Association, 2000).

In 1980, the third edition of the Diagnostic and Statistical Manual (DSM-III) (American Psychiatric Association, 1980) transformed the nature of psychology. The DSM-III incorporated a diagnostic model from medicine that emphasized categories of illness rather than the previous prominence placed on normal and abnormal behaviors (Horwitz, 2002). The result of this paradigm shift in psychology was that large-scale community surveys could be conducted that would use standardized diagnoses of mental disorders to estimate the disease burden on society (Mayes & Horwitz, 2005).

The first two large community surveys, the National Institute of Mental Health's Epidemiologic Catchment Area Program (NIMH-ECA) (Eaton, Reigier, Locke, & Taube, 1981) and the National Comorbidity Survey (NCS) (Harvard School of Medicine, 2005), have been the main sources for estimates of mental disorder prevalence in the US throughout the 1980s and 1990s. Both used diagnostic criteria designed for use in epidemiological and cross-cultural applications of the DSM-III . These surveys showed an overall past-year prevalence for mental disorders of 30% and lifetime rates approaching 50%, estimates that many criticized as unrealistically high compared to clinical experience (R. C. Kessler, et al., 2003). However, clinical calibration studies of the NIMH-ECA found that the indicated prevalences were accurate when compared to blind clinical interviews based solely on DSM-III criteria (R. C. Kessler, et al., 2004). The conclusion reached by the psychiatric community was that the classification system as structured under the DSM-III tended to over-diagnose within a clinical context.

In 1994 the APA published the fourth edition of its Diagnostic Manual (DSM-IV) which reconsidered many of the clinical criteria that had been used in previous editions. Most notably, it added a clinical significance requirement to many of the diagnoses and

required that symptoms cause clinically significant distress or impairment in important areas of functioning (American Psychiatric Association, 2000). Analyses of the previous surveys using the new diagnostic criteria revised the estimates substantially and underscored the need to develop a more accurate and clinically relevant survey (Narrow, Rae, Robins, & Regier, 2002). Based on these new criteria, a series of new national surveys of mental disorders was conducted in 2001-2002 and was designed to update the information on prevalence, correlates, and clinical significance of DSM disorders in the US.

The National Comorbidity Survey-Replication (NCS-R) was administered nationally between 2001-2003 to English speaking adults and provided a means of assessing the prevalence and severity of mental disorders using the DSM-IV and has become the new standard assessment of the burden of mental illness in the US.

According to the National Institute of Mental Health (2009), these data indicate that 26.2% of American adults suffer from a diagnosable mental disorder at some point in their lifetime.

Although the diagnoses in the NCS-R were reviewed as clinically valid (R. Kessler, et al., 1998), it still failed to account for the severity of mental illness; thus, it is likely that these prevalences indicated in the NCS-R exaggerate the actual burden of mental illness in the US. In what has become the definitive review of the NCS-R, Kessler et al. (2005) classified cases as serious, moderate, or mild severity based on a number of criteria including suicidality, work impairment, degree of disability, violent tendencies, and psychosis. They concluded that most of the disease burden is concentrated on the smaller proportion of people who suffer from serious mental illness because all but 14%

of cases surveyed could be classified as mild, transitory, or self-limiting. Anxiety disorders are the most prevalent, although they tend to be of mild severity. Mood disorders have the second highest prevalence and the highest proportion of serious cases. Nearly half of cases include at least one other comorbid psychiatric diagnosis. Other disorders were included in the analysis, many of which fall disproportionately in the severely disabling category; however, these disorders, Alzheimer's disease, schizophrenia, autism, eating disorders, etc., tend to have lower prevalences in the population and thus contribute less to the overall disease burden.

The NCS-R was restricted only to English-speaking adults and thus excluded a substantial proportion of the population. Two other nationally representative surveys, The National Survey of American Life (NSAL) and the National Latino and Asian American Study (NLAAS) used similar methods and diagnostic tools and focused on special populations to better document the mental health needs of minority and immigrant communities in the US (Pennel, Bowers, & Carr, 2004).

These three surveys highlighted patterns in the epidemiology of mental illness. Even the earliest studies of psychiatric patients in the 1930s demonstrated an inverse relationship between socioeconomic status and mental health (Fee, 1987). The NIMH-ECA was the first large-scale survey to demonstrate this inverse relationship and showed that the six-month prevalence for any DSM-III diagnosis was 2.9 times greater among members of the lowest socioeconomic class compared with the highest, although the exact difference varied by illness; for instance, the relationship was weakest for depression and highest for schizophrenia (Perry, 1996).

This inverse relationship between mental disorder prevalence and socioeconomic status has been explained through two alternate theoretical approaches. The Social Causation Perspective argues that members of the lowest socioeconomic classes experience greater psychological stress without the psychological rewards of more affluent groups and that this stress results in a greater risk of mental illness (Cooper, 2005). In other words, impoverished individuals tend to experience more stressful life events, both acute and chronic, than those with higher incomes. Alternatively, the Social Drift Theory explains that the lowest socioeconomic groups have higher rates of mental disorders because a decline in socioeconomic class is a result of their mental illnesses. In this perspective, socioeconomic status is not the causal factor; rather, it is a result of consequences stemming from a disabling mental condition (Perry, 1996).

Although most research has agreed that the excess risk of mental disorders in lower socioeconomic classes is a result of an interaction between these two processes, the literature has been remarkably inconsistent in which is the greater determining factor. Case in point is Hudson's (2005) examination of state hospital records in Massachusetts. He found the expected strong inverse association between socioeconomic status and mental illness and hypothesized that the rates of mental illness were primarily due to the economic stressors faced in impoverished communities. Although his data supported that hypothesis, he admitted that he was unable to demonstrate causation because his analysis was missing the time element necessary to determine directionality. His data also could not completely rule out the social drift perspective, at least for some illnesses. Comparing the timing of hospitalization and changes in demographic variables, employment, change of residence and socioeconomic conditions, he established that

hospitalization was responsible for only a slight net decline in socioeconomic status. Although 14.5% of patients moved to less favorable communities after discharge, this was balanced by the 13.3% of patients who moved to more affluent areas.

Dembling et al. (2002) examined geographic migration patterns of state psychiatric patients in Virginia over 18 years and found that 59% of them moved to areas of less favorable socioeconomic conditions. They found that there was a net flow of individuals from the mental health system that could be understood as a migration of the mentally ill from more affluent areas to places where the costs of living were less expensive. This migration effect would result in the excess risk indicated in the previously discussed community surveys.

It is important to keep these trends in mind when examining the epidemiology of mental illness in immigrant populations. The results discussed above were based primarily on established American communities, but when they were compared with those of immigrant populations, researchers uncovered an interesting effect. The NSAL, NLAAS, and a number of other exploratory studies established that many immigrant groups scored significantly higher on mental health exams than would usually be expected based on their demographic characteristics (Takeuchi, Alegria, et al., 2007). Generally, these immigrant groups have relatively low socioeconomic potential when they arrive in this country and one would assume, from the studies discussed above, that their mental health would suffer accordingly. Rather, it seems that immigration provides a protective element against mental illness and that the prevalences are significantly below the expected rates. More comprehensive examinations of the NSAL and NLAAS supported this finding and further documented an increased risk of disorders associated

with years of US residency, language proficiency, greater education and income, and successive generations (J. S. Jackson, et al., 2007; Williams, et al., 2007).

This protective nature of immigration has been explained in a number of ways. Some have argued that there is a selective pressure for mentally healthy immigrants (Takeuchi, Zane, et al., 2007); in other words, only the mentally healthy are fit to leave their homes and succeed at a life in a new country. Others have reasoned that these results may be an artifact of cultural values and poor English-communication or problem recognition when participating in mental health exams (Abe-Kim, et al., 2007). However, a growing body of evidence suggests that that the mentally healthy immigrant is a real phenomenon and that greater acculturation, longer US residency, and US-nativity places one at an elevated risk for psychiatric distress.

This paradoxical effect, that immigrant groups exhibit better mental health than would be predicted by their social circumstances, has been observed to some extent across all immigrant groups. Studies of Latino immigrants have reported lower rates of anxiety, depression, and substance abuse despite the stress and poverty associated with their immigration experience; however, this trend is reversed in later generations. Furthermore, studies of this phenomenon noticed that there was an obvious reduction in mental illness in Mexican immigrants compared to their Mexican-American counterparts but that this difference disappears for immigrants that resided in the US for more than 12 years (Hovey & Magana, 2002). Alegria et al. (2007) examined the prevalence of these disorders in Latinos represented in the NLAAS. They found that US-born Latinos are 1.6 times more likely than immigrant Latinos to have a lifetime mental health disorder. Further investigations have revealed that there are increased rates of illnesses associated

with US-nativity, increased English proficiency and US-residence, and higher education and income (Alegria, Mulvaney-Day, Woo, et al., 2007; Alegria, Shrout, et al., 2007) although these effects differ somewhat between ethnic subgroups. For example, the protective nature is observable for all disorders in Mexican immigrants, it is only pronounced for substance disorders in Cubans and other Latino groups, and not observed at all in Puerto Ricans.

Analyses of Asian immigrants show much of the same pattern. Examinations of the prevalences of mental health disorders (Duldulao, Takeuchi, & Hong, 2009; Takeuchi, Alegria, et al., 2007; Yip & Gee, 2008) and mental health service use (Abe-Kim, et al., 2007) indicate that Asian Americans appear to have lower rates of mental disorders and service use compared to the general population but increase in successive generations. For both lifetime and 12-month psychiatric disorders in men, the risk of mental illness increases significantly through each generation. The pattern is also seen in Asian women, although not statistically significant for the second generation. Data analyzed from the NLAAS have also indicated the same trend in suicidal behaviors. US-born Asian women had a significantly higher prevalence of suicidality compared to all other groups and after controlling for the standard socio-demographic variables, both US-born men and women were more at risk compared to those born outside the US.

What about the immigration experience reduces the risk of mental illness and why would this protection not remain throughout US-residency or extend to the children and grandchildren of immigrants? Researchers have theorized that the answer to this trend can be found by analyzing the acculturation process and at least some of it can be explained through social causation.

For example, Park and Bernstein (2008) examined the experiences for Korean immigrants in the US to see how they mitigated the stress of acculturation. Koreans were chosen as an interesting case study because, as a group, they are the newest and fastest growing immigrant population and almost all are foreign-born. Park and Bernstein found that aspects of Korean culture have mediated the stress of immigration and reduced symptoms of depression. The greater value of the collective over the individual is a traditional aspect of Korean culture, and they found that a greater involvement in one's family and community worked to balance out the stresses of American life and were negatively associated with symptoms of depression. They found evidence that the acculturation process was most stressful through its conflict with traditional culture because it forced people to fill multiple roles. For example, employed women were required to function in the western workplace as well as continuing to perform all their household and child-rearing family responsibilities, oftentimes resulting in psychological distress. However, the prime protective variable against mental disorders was access to sufficient social support networks. Previous studies have found that a higher level of social and familial support was associated with a lower incidence of depression. For instance, although physical or emotional separation from family is associated with a greater susceptibility to the consequences of stress, having a strong confidante in one's social network that can provide emotional support is sufficient to mitigate the symptoms of depression and anxiety (Fawzi, et al., 2009 ; Merz, Oort, Ozeke-Kocabas, & Schuengel, 2009; Park & Bernstein, 2008).

This benefit of healthy social networks has also been observed in Latino populations. Some authors have found that elevated levels of stress associated with the

acculturation process result in significant increases in depression, suicidality, and anxiety (Hovey, 2000; Hovey & Magana, 2002), but that this stress can be mitigated or exacerbated through various factors of social life. They concluded that individuals with satisfactory social and family support experience less psychiatric distress than those without the same support. Furthermore, the likelihood of mental illness was greater in immigrants who felt caught between the influence of the values and norms of traditional and mainstream societies. Taking this into account, Alegria et al. (2007) found that sufficient perceived family support reduced the odds of depression and anxiety by half and substance abuse by 10%. Alternatively, they found that perceived family stressors increased the odds of depression, anxiety, and substance abuse by over 300%.

This is only a brief discussion of the effects of social support on mental illness rates in Latino and Asian immigrants, but the research is exhaustive in these groups; however, little work has been conducted on Caribbean populations living in the US. Often times, Afro-Caribbeans and African Americans are included together as a homogenous group in community surveys (Bryce-Laporte, 1999; J. Jackson & Cothran, 2003; J. S. Jackson, et al., 2004; Portes & Grosfoguel, 1994), but the NSAL included psychosocial health-related data on these ethnic groups and was the first survey available that made the distinction.

The Office of Management and Budget only specifies American Indian or Alaska Natives, Asian, Black or African American, Native Hawaiian or Pacific Islander, and White as racial categories for purposes of enforcement and civil rights legislation (U.S. Census Bureau, 2000) but this often conflates the distinction between immigrant or ethnic groups in official statistics. For example, the term 'Asian' includes the economically and

socially prosperous Japanese and Koreans as well as the less prosperous Southeast Asians that have experienced more difficulties. In this instance, African Americans and Afro-Caribbeans have been included together for policy purposes although they differ culturally and in their health needs (Waters & Eschback, 1995).

Additionally, there are important distinctions in the immigration experience between different Caribbean nationalities. In 2002, the Center for Immigration Studies published a snapshot of America's foreign-born populations (Camarota, 2002) and found that Caribbean immigrants accounted for 8.2% (2.6 million) of foreign-born individuals living in the US and were among the top 25 nationalities entering the country each year. The social circumstances of each nationality differed substantially; for instance, poverty rates varied by nationality with Dominicans at 25.6%, Cubans 19.8%, Haitians 12.0%, and Jamaicans 6.3%. Similar disparities were discovered for educational attainment, employment, and qualification for welfare services. And although exact statistics were not available, they estimated that most Caribbean immigrants choose to reside in dense city centers or suburban areas surrounding large metropolitan areas; very few are found in rural communities. This has had important implications for the provision of resources to Caribbean immigrants because they build communities in urban areas where services are already available (J. S. Jackson, et al., 2007).

The only full exploratory analysis of Caribbeans represented in the NSAL was by Williams et al. (2007) and compared prevalences of mental disorders against African Americans and between US-born and foreign-born Caribbeans. Compared to African Americans, the authors found that men claiming a Caribbean background were slightly more at risk for a lifetime mood or anxiety disorder but had nearly the same risk for

substance disorders. Caribbean women were significantly less likely to have an anxiety or substance disorder but did not differ from African American women in their prevalence of mood disorders. US-nativity and immigration at an early age were significant risk factors for men and women in all mental disorders. Similar to studies of Latinos and Asians, generation status was a primary predictor of mental status: second generation men had twice the risk of any mood or anxiety disorder and 8.7 times the risk of a substance disorder, and this risk was accentuated in the third generation. Second generation women did not differ significantly in any disorder from the first generation, but the pattern held true for third generation or later with odds ratios similar to those seen in the men. The only variable that did not fit the pattern seen in other immigrant groups was the number of years of US residence which was opposite of the usual trend. Except for mood disorders in women residing in the US for more than twelve years, longer US residency tended to reduce the odds of any mental disorder in men and women.

Williams et al. (2007) noted that the first generation of immigrants have only a slightly higher prevalence of mental disorders compared to the African-American population as a whole, but that these rates deteriorated with US Nativity. They explain that this can be discussed through a number of hypotheses including the social-drift and social causation theories discussed earlier. According to these perspectives, only those with adequate psychological and material resources are able to leave their homes and settle in a new country. However, their US-born children and grandchildren would react to the stressors of their socioeconomic situations similar to native populations and thus exhibit a decline in their mental health. It is likely impossible to test this reasoning

directly, but a cursory discussion of the psychological landscape in Caribbean countries may be useful in exploring this idea further.

A literature review revealed no large-scale community surveys similar to the NCS-R available for this discussion; however, many studies reported smaller-scale efforts at determining the mental health conditions in some Caribbean countries and these have implications in understanding the immigrant experience. Of all Caribbean nations, Jamaica is best situated economically to identify and address the mental health needs of its population. Two primary issues have been identified in Jamaica concerning mental health issues and practice.

First is a problem with disaster psychiatry. All Caribbean islands are affected by natural disasters in the form of floods and hurricanes as well as man-made disasters like crime and violence; however, the mental health system is not set up to deal with the resultant post traumatic stress-related disorders (Baker-Henningham, Meeks-Gardner, Chang, & Walker, 2009; Daly, et al., 2008). For example, the Jamaican government estimates that 29% of the population aged 15-74 suffer from some kind of PTSD-related diagnosis (Saunders, 2008) which is significantly higher than prevalences observed in immigrants to the US (Williams, et al., 2007).

The second problem faced is a cultural stigmatization placed on the mentally ill that discourages many from admitting to personal problems or seeking professional help. Gibson et al. (2008) found that stigmatization and negative attitudes are deeply entrenched in Caribbean societies to the point of becoming internalized by the mentally ill and their families. They documented extreme rates of violence and prejudice against the mentally ill because they are often stereotyped as dangerously insane. These attitudes

are so pervasive in the culture that they are internalized in the minds of the mentally ill and their families. Although family members reported fewer instances of stigmatizing behaviors and attitudes, they were not immune to societal effects. Furthermore, these attitudes negatively effected help-seeking behaviors of those needing treatment. Gibson et al. (2008) conclude that this culture of stigmatization substantially hampers any estimates of national mental health and must be taken into account when developing official and treatment policies.

Additionally, it is important to note that Caribbean nations can not be discussed as a homogenous group. For example, although many of these nations face similar environmental problems, the socioeconomics of each affect how problems are dealt with and how illness rates may be examined in recent immigrants to the US. The Jamaican Health Service followed a similar trend of deinstitutionalization as the US but did not compensate through improved community based services (Hutchinson, et al., 2004); however, there are strong state-run hospitalization programs and community services. On the other side of the spectrum, conditions in Haiti are dismal and the infrastructure is such that no community surveys are available for comparison to recent US immigrants. Thus, although *in situ* discussions of Haiti are not available, Fawzi et al. (2009) examined rates of mental illness in recent Haitian immigrants compared to other immigrant and refugee groups and found rates of depression and PTSD more similar to east-Asian refugees than other Caribbeans.

These conditions faced in their home countries can explain the slightly higher prevalences of mental disorders in recent Caribbean immigrants compared to African-Americans observed by Williams et al. (2007) but it does not explain the decline in later

generations. According to the social-causation hypothesis, the later generations should exhibit mental health problems in accordance with the social circumstances; however, in this case the later generations actually decline relative to African-American populations and their parents, despite positive changes in social achievement. It is possible that this pattern can be understood within the process of acculturation in immigrant communities.

Caribbeans self-segregate themselves from other ethnic groups in the US.

Jackson et al. (2003) examined the relationships between African Americans and Afro-Caribbeans to understand how Caribbeans construct their identities in the greater American milieu. They found that Caribbean populations living in the US consciously distance themselves from other African-heritage groups. For example, Caribbeans were more likely to report forming social relationships with only other Caribbeans rather than Africans or African Americans, usually for reasons of shared culture and background. When examining the interpersonal relationships between Caribbeans and African Americans, Caribbean-born individuals were more likely to report negative attitudes or feelings of superiority over African Americans. For example, Caribbeans were more likely to view African Americans as poorly educated, culturally out of touch, and possessing a slavery mentality of futility and defeat. As a result, the authors conclude, the study participants indicated that communication between Caribbeans and African Americans was poor due to myths, misconceptions, ignorance, and stereotypes; thus, these groups generally self-segregated from each other.

However, these interactions begin to change in the second generation. Waters and Eschbach (1995) observe similar findings to Jackson et al. (2003) that first generation Caribbeans living within existing African-American communities are faced with a great

deal of discrimination. They respond by forming a reactive ethnicity characterized by strong cultural networks and self-segregation and develop social capital through these community ties. Contrary to the children of European immigrants earlier in the 20th century, second generation Caribbean minorities tend to experience socioeconomic decline relative to their parents. They are likely to ‘Americanize’ by internalizing many the attitudes of the native ethnic group of which they have social access and this has important consequences to the developing psychology of these children. It results in a hybrid cultural system that does not fully engender the later generations into a single social niche and the resultant conflict between this hybrid culture and the traditional culture of their parents has well-documented implications for the development of mental disorders.

Hovey (2000) writes that family dysfunction and ineffective social support were predictors of mental disorders in immigrant groups and that the provision of emotional support seems to ease stressful experiences of acculturation. In other words, individuals who experience excessive acculturative stress may be at risk of developing mental disorders. He identified factors that may mitigate or exacerbate acculturative stress including social support or conflict found in the community or family. Hovey concluded that individuals with relatively high levels of social and family support may experience less psychiatric distress than those without that same support. This perspective can be used to understand the higher rates of mental disorders observed in later generations. Acculturation stress experienced in both situations has been linked to increased prevalence of anxiety and depressive disorders (Alegria, et al., 2008; Alegria, Mulvaney-Day, Torres, et al., 2007) and Hovey and Magana (2002) explain that these disorders are

rooted in the conflict between traditional values and those of mainstream society. In this instance, the strength or weaknesses of family and social ties become prime predictors of disorder rates.

The overall trends in mental illness for Caribbean immigrant populations discussed above are similar to those of other immigrant groups. In the following examination, the perceived effectiveness of family support will be evaluated as a predictor of emotional health and a mitigator of the stress experienced through the acculturation process. Additionally, a high level of perceived family conflict should exacerbate the stress experienced through acculturation and be associated with higher rates of mental disorders. Presumably, if family support and conflict are causal factors, the disorder rates observed in Williams et al. (2007) will disappear or become less intense.

Chapter III

Materials and Methods

The National Survey of American Life (NSAL) was designed to elucidate the distribution of mental disorders, service use, and behavioral correlates in African American (n = 3570) and Afro-Caribbean (n = 1623) populations in the US compared to Caucasian populations (n = 1006) matched to the same communities (ICPSR, 2004). The study was conducted by the Program for Research on Black Americans within the Institute for Social Research at the University of Michigan in partnership with the National Institutes of Mental Health. The interviews were conducted face-to-face using a computer-assisted survey between February 2001 and March 2003 and 14% were conducted at least partially over the telephone (J. S. Jackson, et al., 2004). Additional interviews were conducted with 1200 African-American and Caribbean adolescents attached to sampled households, but these were not included in this analysis (J. S. Jackson, et al., 2004).

Mental disorders were identified using the Diagnostic and Statistical Manual-IV (DSM-IV), International Statistical Classification of Diseases and Related Health Problems (ICD-10) and the World Health Composite International Diagnostic Interview (WHO-CIDI) and included details of physical health, social conditions, known associated factors, and demographic characteristics. The diagnostic portion of the questionnaire was adapted from a modified World Health Organization's Composite International Diagnostic Interview (CIDI) (ICPSR, 2004) which was evaluated by Kessler et al.

(2004). Previous studies had indicated that the more structured and objective the diagnostic instrument, the more it underestimated prevalence. Interviews and questionnaires are structured into a series of stem-questions; if a respondent answers positively to a stem question, they are prompted into a deeper investigation which produces a longer interview. Kessler et al. (2000) found that respondents were quickly overcome with interview fatigue and learned to answer negatively to stem questions in order to shorten the interview which resulted in an underestimation of disorder rates. .

With this methodological issue in mind, the evaluation of the WHO-CIDI consisted of a modified test-retest design. Clinical interviewers were unblinded to the survey results and participants were forced to discuss each of the stem questions with a clinician. In order to further reduce the effect of interview fatigue, the order of the questions was changed between the test and retest. The result of this evaluation was to create a statistical model for judging the relative proportions of WHO-CIDI surveys needing additional structured clinical interviews for validity. This method was applied to the NCS-R and included 677 individuals from the NSAL. Each of these individuals received a structured clinical interview in addition to the WHO-CIDI survey which evaluated the prevalence of Major Depressive Episodes, Dysthymia, Generalized Anxiety Disorder, Panic Disorder, Phobias, Post-Traumatic Stress Disorder, and Drug and Alcohol Abuse-Dependence.

The NSAL was unique from previous epidemiological studies of minority psychiatric disorders. It included a large, nationally representative sample of African-Americans because previous studies had lacked adequate sample sizes to address behavioral and psychological variation. Afro-Caribbeans are often combined with

African-American populations in health-related surveys, so the NSAL was the first study to distinguish between the two and examine the variation between these important demographic groups. The NSAL not only assessed the presence of mental disorders, but also determined the levels of impairments associated with these diagnoses needed for a clinical diagnosis. Finally, care was taken to include equal proportions of African-Americans, Afro-Caribbeans, and Caucasians from all social contexts and geographical areas.

The final sample used for this analysis included 1,598 adults claiming Caribbean descent. Respondents self-identified as Spanish Caribbean (n = 180), Haitian (n = 298), Jamaican (n = 510), Trinidad and Tobago (n = 170), or Other (n = 440). Other data included age at immigration, marital status, number of years in the US, and work status. A majority of the individuals were sampled from the Northeastern US (n = 1119) or the South (n = 449); the remaining 30 individuals lived in the West or Midwestern regions.

Outcome Variables

Lifetime prevalence of mental disorders were computed using the DSM-IV diagnoses included in the NSAL and were differentiated into three categorical variables describing the presence or absence of any mood, anxiety, or substance disorder.

Prevalence of mood disorders included any diagnosis of bipolar disorders, dysthymia, hypomania, mania, major depressive disorder, or depressive episode. Anxiety disorders included lifetime diagnoses of generalized anxiety disorder, panic disorders, post traumatic stress disorder, separation anxieties, and all phobias. Substance disorders included lifetime diagnoses of alcohol or drug abuse or dependence.

Immigration Variables

Previous studies have determined that there are distinct differences in mental illness patterns associated with the immigration experience. As discussed earlier regarding Caribbean populations living in the US, an increased risk of mental illness has been associated with the acculturation process. The risk of mental illness is increased with US-nativity and generation status, increased income, and education but reduced with years of US residency in foreign born individuals (J. S. Jackson, et al., 2007; Livingston, Neita, Riviere, & Livingston, 2007; Murphy & Mahalingam, 2004; Williams, et al., 2007). Each of these variables were included in the analysis as primary predictors for the mental health outcomes.

Age at immigration was collected categorically in the NSAL: respondents responded as either US-born or immigrating to the US at ages <12, 13-17, 18-34, or 35+. Years of US-residency were also collected categorically in the NSAL, US-born, <5, 5-10, 11-20, or 20+ years. The NSAL included the national origins of Caribbeans included in the survey: Haiti, Jamaica, Trinidad and Tobago, Spanish Caribbean, or Other. Additionally, the NSAL asked respondents to indicate simply whether they were foreign or US-born.

Demographic Variables

For this analysis, the demographic variables included family income, age category, work and marital status, and family income. Work status was established through participants responses indicating that they were not in the work force, employed, or unemployed. Marital status was established as never married, divorced/separated, or married/cohabitating. Education achievement was collected categorically in the NSAL,

0-11, 12, 13-15, and 16+ years. Although the NSAL collected age as a continuous variable in the NSAL, it was converted into categories, 18-29, 30-39, 40-49, 50-59, and ≥ 60 , for the purpose of this analysis. Income was also collected as a continuous variable with an upper limit of \$200,000/year, but this was also converted to categories, \$0-\$12,499, \$12,500-\$22,499, \$22,500-\$42,499, \$42,500-\$74,999, and \$75,000+.

Family Dynamics

Family factors were assessed through the support or conflict perceived by the individual rather than merely measuring access to social networks. It is likely that simple access to a social network does not ensure that the support will be effective (Hovey & Magana, 2002); thus, the perceived quality may be a more accurate measure of social support. In this case perceived family support and conflict was calculated from a list of questions designed to establish the degree that families either positively or negatively contribute to emotional well-being. Family support was constructed using a seven-item index questioning the frequency family helps one out, the frequency one helps the family, the frequency of contact with relatives, feelings of closeness with family members, frequency family makes one feel loved, frequency family listens to problems, and the frequency family expresses concern for one's well-being. Respondents answered through a Likert-type scale ranging from 0 for never to 5 for always. A total score was calculated by summing the item responses with a higher score indicating a higher level of perceived support. A Cronbach's alpha calculation was used to test the internal consistency of the reliability of the total score. In this case, the internal consistency of the seven included questions was judged to be adequate for use in later analyses ($\alpha = 0.736$). The family stress variable included three items regarding the frequency of family conflict and was

calculated identically to the family support index. It included questions of how often a respondent's family makes too many demands, criticizes, or takes advantage of them. The total score was also judged to have an adequate internal consistency ($\alpha = 0.726$).

Analysis

The hypothesis being tested was whether these family dynamics are the underlying factors determining the decline in mental health observed discussed earlier. Compared to previous studies, variables associated with higher risk of mental illness should be reduced or eliminated while the family health indicators remain significant.

To test this hypothesis, binomial logistic regressions were performed to determine the relative increases or decreases in risk contributed by each variable. Logistic regression is commonly used when the dependent variable is categorical and there are several categorical and continuous independent variables. In this instance, three separate regressions using the dependent variables of lifetime mood disorders, lifetime anxiety disorders, and lifetime substance disorders, were performed separately for men and women. The independent variables of prime interest used were ethnic background, number of years in the US, nativity, age at immigration, family support and family stress indices. Additional known risk factors of mental disorders were included as control variables. For instance, previous studies have indicated that income level, employment and marital status, years of education, and age are all important contributors in the assessment of risk in mental disorders (R. Kessler, et al., 2008).

The review of the literature indicated that men and women present with significantly different prevalences of psychiatric disorders. For example, women are twice as likely as men to experience depression or anxiety (Dobson & Dozois, 2008;

Weich, Sloggett, & Lewis, 1998), and substance dependence is 45% higher in men than women (Dawson, 1996). These gender disparities in prevalence are observed regardless of age or ethnicity and was found to be true in this sample. Significant differences were observed in the lifetime prevalences of mood disorders ($X^2 = 7.892$, 1df, $p = 0.005$), substance disorders ($X^2 = 21.434$, 1df, $p < 0.001$), and anxiety disorders ($X^2 = 9.567$, 1df, $p = 0.002$); thus, it was deemed appropriate to conduct separate multivariate analyses for men and women.

Chapter IV

Results

Table 1 presents the percentages of men and women in the sample having a mood, anxiety, or substance disorder as well as indicating significant chi-square variation.

Women had higher unadjusted prevalences of mood and anxiety disorders, but a greater percentage of men carried a substance disorder diagnosis and these gender differences met statistical significance.

Table 1

Rates of mental disorders in males and females for each control and predictor variable.

	N	Mood Disorder		Anxiety Disorder		Substance Disorder	
		Male%	Female%	Male%	Female%	Male%	Female%
Total		8.7	13.3	21.0	29.7	8.7	3.3
Age Category			*		*		*
18-29	431	11.8	17.6	24.2	33.9	11.8	4.5
30-39	387	7.2	14.9	18.0	26.2	5.8	1.6
40-49	358	8.3	11.6	24.1	27.1	9.0	5.8
50-59	201	6.8	11.0	17.6	30.7	5.4	1.6
> 60	221	6.9	6.7	17.8	16.7	8.9	1.7
Years of Education							
0-11 years	296	4.6	10.3	23.7	21.0	11.5	4.8
12 years	473	9.0	12.3	20.1	25.5	7.9	2.5
13-15 years	440	8.9	16.2	18.5	31.3	6.0	3.7
16+ years	389	11.7	13.1	22.8	28.7	10.3	2.9
Marital Status					*		
Divorced/Separated	685	11.4	11.6	19.0	28.0	8.6	4.0
Never Married	380	11.3	16.6	26.2	32.2	11.3	3.3
Married/Cohabiting	533	6.3	11.4	18.6	23.6	7.2	2.8
Work Status							
Employed	1166	8.7	12.7	20.3	27.1	7.7	3.1
Unemployed	155	10.3	14.4	24.1	27.8	10.3	4.3
Not in labor force	277	7.6	14.6	22.8	30.8	13.0	3.3

Table 1 continued

	N	Mood Disorder		Anxiety Disorder		Substance Disorder	
		Male%	Female%	Male%	Female%	Male%	Female%
Household Income					*		*
0-124999	238	4.3	16.6	21.7	40.8	7.2	5.9
12500-22499	266	8.3	17.0	16.7	25.3	10.7	4.4
22500-42499	515	9.1	11.4	22.5	24.5	11.5	2.3
42500-74999	365	11.4	13.6	21.1	24.1	6.0	3.5
75000+	214	6.7	6.4	21.0	28.4	6.7	0.0
Caribbean Origins				*	*		*
Spanish Caribbean	180	8.9	21.8	25.3	45.5	11.4	5.0
Haiti	298	5.7	10.2	12.3	19.3	5.7	0.0
Jamaica	510	6.0	12.9	21.4	25.5	7.0	3.6
Trinidad and Tobago	170	13.1	12.8	34.4	28.4	11.5	1.8
Other	440	12.4	12.6	20.0	28.1	10.6	5.2
Age at immigration			*		*	*	*
<12 years	432	9.5	13.5	21.4	30.5	10.7	6.4
13-17 years	225	9.1	14.9	22.7	34.0	4.5	2.1
18-34 years	160	5.5	6.5	19.1	19.9	2.7	0.3
35+ years	556	7.9	7.1	17.1	17.0	6.6	0.0
US born	188	12.8	23.1	26.2	39.2	18.6	7.7
Years in the US		*	*		*		
<5 Years	432	7.7	10.6	17.3	18.2	3.8	0.0
5-10 Years	118	14.7	12.5	25.0	31.3	7.4	1.0
11-20 Years	164	5.1	10.1	18.2	23.3	2.9	0.4
20+ Years	364	5.5	8.3	18.6	23.0	6.0	3.2
US Born	512	12.8	23.1	26.2	39.2	18.6	7.7
Generation Status		*	*		*	*	*
Foreign Born	1129	7.2	9.2	19.7	23.6	5.2	1.8
US Born	432	12.8	23.1	26.2	39.2	18.6	7.7

* Chi-Square indicates significant differences in these groups, $p < .05$

The distribution of mental disorders for each of the demographic variables is largely consistent with previous findings. More years of education carries a higher prevalence of mood disorders for men and anxiety disorders in females. Married or employed men and women have lower overall rates of each mental disorder. US-born have substantially higher rates of each disorder compared with foreign-born individuals, both men and women have a marked rate increase for all disorders. Of those born outside the US, those in the US between 5-10 years show the highest rates of mental disorders.

Table 2

Results of logistic regressions examining associations between main predictor and control variables for mood disorders.

	Males OR (95% CI)	Females OR (95% CI)
Age Category		
18-29	1.000	1.000
30-39	1.239 (.465 , 3.301)	.540 (.294 , .994)
40-49	.750 (.259 , 2.174)	.683 (.338 , 1.380)
50-59	.959 (.227 , 4.048)	.411 (.160 , 1.060)
> 60	.839 (.185 , 3.807)	.709 (.209 , 2.410)
Years of Education		
0-11 years	1.000	1.000
12 years	.491 (.168 , 1.436)	.685 (.329 , 1.427)
13-15 years	.522 (.169 , 1.608)	.445 (.211 , .936)*
16+ years	.285 (.093 , .876)*	.421 (.190 , .933)*
Marital Status		
Never Married	1.000	1.000
Divorced/Separated	.563 (.233 , 1.362)	.939 (.514 , 1.715)
Married/Cohabiting	.731 (.311 , 1.716)	.956 (.561 , 1.630)
Work Status		
Not in Work Force	1.000	1.000
Employed	1.068 (.360 , 3.160)	.943 (.510 , 1.741)
Unemployed	.855 (.207 , 3.531)	.816 (.360 , 1.848)
Household Income		
0-124999	1.000	1.000
12500-22499	.425 (.094 , 1.921)	.725 (.377 , 1.392)
22500-42499	.548 (.139 , 2.167)	1.601 (.846 , 3.031)
42500-74999	.313 (.077 , 1.271)	1.618 (.775 , 3.378)
75000+	.629 (.133 , 2.972)	4.323 (1.554 , 12.028)*
Caribbean Origins		
Spanish Caribbean	1.000	1.000
Haiti	1.940 (.568 , 6.624)	1.631 (.734 , 3.621)
Jamaica	1.786 (.599 , 5.327)	.947 (.470 , 1.909)
Trinidad and Tobago	.755 (.215 , 2.651)	1.272 (.544 , 2.970)
Other	.815 (.289 , 2.297)	1.355 (.670 , 2.741)
Age at immigration		
US Born	1.000	1.000
< 12 years	1.630 (.584 , 4.547)	2.883 (1.476 , 5.631)
13-17	2.185 (.606 , 7.877)	3.065 (1.351 , 6.952)
18-34	3.195 (.993 , 10.282)	8.532 (3.662 , 19.879)
35+	1.846 (.332 , 10.265)	7.053 (2.058 , 24.172)
Years in the US		
US Born	1.000	1.000
<5 Years	.467 (.089 , 2.439)	.372 (.123 , 1.121)
5-10 Years	.310 (.087 , 1.103)	.277 (.110 , .693)*
11-20 Years	.754 (.237 , 2.401)	.593 (.286 , 1.231)
20+ Years	.944 (.385 , 1.364)	.965 (.327 , 1.106)
Nativity Status		
Foreign Born	1.000	1.000
US Born	1.168 (.210 , 6.503)	.914 (.290 , 2.884)
Family Support		
	.932 (.869 , 1.000)	.970 (.929 , 1.012)
Family Conflict		
	1.392 (1.221 , 1.587)*	1.250 (1.146 , 1.364)*

* p<.05

The results of the logistic regressions for mood disorders are presented in Table 2. Men and women were examined separately to identify the predominant risk factors for lifetime mood disorders. For men, 16+ years of education compared to 0-11 years provided a significant reduction in risk for mood disorders (OR = .285, 95% CI .093 , .876). The family support index provided a slight reduction in risk, but it was just shy of statistical significance (OR = .932 95% CI .869 , 1.000). The Family Conflict Index was the single most significant factor that determined whether or not an individual would present with a mood disorder diagnosis (OR = 1.392, 95% CI 1.221 , 1.587). All other factors failed to meet statistical significance. Similar to men, women with higher education also tended to have a reduced risk of mood disorders. Women had an increasing level of risk associated with their age at immigration compared to those born in the US. There is a trend towards a reduction in risk in women with more recent immigration, although this reduction failed to meet statistical significance in most cases. For example, compared to women born in the US, women living in the country were less likely to have a mood disorder until they had been in the US for over 20 years where they were nearly equivalent as native-born although only women living in the country between 5-10 years met statistical significance (OR = .277, 95% CI .110 , .693). Finally, women in the highest family income bracket, >\$75,000/year had an increased risk of lifetime mood disorders (OR = 4.323, 95% CI 1.554 , 12.028). All other variables failed to reach any statistical significance.

The second logistic regression, presented in Table 3, focused on risk factors associated with a lifetime diagnosis of anxiety disorders for men and women. Haitian men were much more likely to present with a diagnosis compared to the reference group

Table 3

Results of logistic regressions examining associations between main predictor and control variables for anxiety disorders.

	Males OR (95% CI)	Females OR (95% CI)
Age Category		
18-29	1.000	1.000
30-39	.933 (.485 , 1.795)	.918 (.568 , 1.481)
40-49	.602 (.292 , 1.242)	.781 (.455 , 1.340)
50-59	.833 (.346 , 2.252)	.448 (.220 , .913)
> 60	1.005 (.355 , 2.847)	1.159 (.476 , 2.822)
Years of Education		
0-11 years	1.000	1.000
12 years	1.210 (.665 , 2.204)	.648 (.386 , 1.088)
13-15 years	1.499 (.775 , 2.889)	.771 (.477 , 1.331)
16+ years	1.015 (.517 , 1.993)	.837 (.465 , 1.505)
Marital Status		
Never Married	1.000	1.000
Divorced/Separated	1.235 (.667 , 2.288)	.646 (.413 , 1.011)
Married/Cohabiting	.649 (.371 , 1.138)	.783 (.518 , 1.185)
Work Status		
Not in Work Force	1.000	1.000
Employed	1.498 (.742 , 3.026)	1.133 (.702 , 1.828)
Unemployed	1.361 (.537 , 3.451)	1.386 (.724 , 2.654)
Household Income		
0-124999	1.000	1.000
12500-22499	1.169 (.489 , 2.796)	1.951 (1.148 , 3.316)*
22500-42499	.851 (.410 , 1.770)	1.988 (1.224 , 3.262)*
42500-74999	.822 (.372 , 1.820)	2.467 (1.386 , 4.391)*
75000+	.971 (.401 , 2.355)	1.762 (.833 , 3.515)
Caribbean Origins		
Spanish Caribbean	1.000	1.000
Haiti	3.239 (1.437 , 7.301)*	2.578 (1.395 , 4.765)*
Jamaica	1.409 (.724 , 2.742)	1.409 (.814 , 2.438)
Trinidad and Tobago	.747 (.335 , 1.667)	1.520 (.790 , 2.924)
Other	1.490 (.749 , 2.964)	1.475 (.854 , 2.548)
Age at immigration		
US Born	1.000	1.000
< 12 years	1.450 (.712 , 2.953)	1.649 (.991 , 2.743)
13-17	1.178 (.517 , 2.685)	1.381 (.760 , 2.512)
18-34	1.274 (.599 , 2.709)	3.200 (1.800 , 5.690)*
35+	1.304 (.413 , 4.117)	5.677 (2.265 , 14.226)*
Years in the US		
US Born	1.000	1.000
<5 Years	.993 (.360 , 2.735)	.826 (.345 , 1.977)
5-10 Years	.619 (.264 , 1.453)	.362 (.186 , .702)*
11-20 Years	.978 (.921 , 1.012)	.804 (.482 , 1.340)
20+ Years	.926 (.440 , 1.876)	.886 (.435 , 1.853)
Nativity		
Foreign Born	1.000	1.000
US Born	.718 (.238 , 2.165)	.690 (.276 , 1.726)
Family Support	.965 (.921 , 1.012)	.977 (.945 , 1.010)
Family Conflict	1.234 (1.127 , 1.352)*	1.193 (1.114 , 1.277)*

* p<.05

(OR = 3.239, 95% CI 1.437 , 7.301). A high family conflict score also contributed to the likelihood of an anxiety disorder diagnosis (OR = 1.234, 95% CI 1.127 , 1.352).

Statistical significance was not observed for any other variable in men. There were more variables significantly associated with anxiety disorders in women compared to men.

Age at immigration clearly affects the the prevalence of anxiety in this sample: the risk was elevated for women who immigrated to the US between the ages of 18-34 (OR = 3.200 95% CI 1.800 , 5.960) and >35 years (OR = 5.677 95% CI 2.265 , 14.226) compared to US natives. Haitian women were two and a half times more likely to have a diagnosis than the reference group (OR = 2.578 95% CI 1.395 , 4.765). Household income also contributed significantly to women's anxiety. Compared to the lowest income bracket, women in households making between \$12,500-\$22,499/year (OR = 1.951 95% CI 1.148 , 3.316), \$22,500-\$42,499/year (OR = 1.988 95% CI 1.224 , 3.262), and \$42,500-\$74,999 (OR = 2.467 95% CI 1.386 , 4.391) all increased risk. There was a reduction of risk associated with between 5-10 years of US residency (OR = .362, 95% CI .186 ,.702) compared to US-born. Finally, there was a slight association between family conflict index and anxiety diagnosis in women (OR = 1.193, 95% CI 1.114 , 1.277).

The regression analysis on lifetime substance abuse, presented in Table 4, was hampered by the lower overall prevalence, especially for women. In men, a higher risk of substance related disorders was associated with having between 13-15 years of education (OR = 2.754, 95% CI 1.039 , 7.300), immigration to the US after the age of 13 compared to US natives, and a high family conflict index (OR = 1.175, 95% CI 1.034 , 1.336). All other variables failed to meet statistical significance. In women, only immigration

Table 4

Results of logistic regressions examining associations between main predictor and control variables for substance disorders.

	Males OR (95% CI)	Females OR (95% CI)
Age Category		
18-29	1.000	1.000
30-39	1.477 (.551 , 3.957)	2.921 (.704 , 12.130)
40-49	.637 (.242 , 1.674)	.641 (.208 , 1.974)
50-59	1.154 (.294 , 4.540)	1.236 (.202 , 7.557)
> 60	.603 (.092 , 3.940)	1.735 (.207 , 14.568)
Years of Education		
0-11 years	1.000	1.000
12 years	2.001 (.843 , 4.746)	2.123 (.600 , 7.512)
13-15 years	2.754 (1.039 , 7.300)*	1.387 (.397 , 4.844)
16+ years	1.078 (.414 , 2.807)	1.087 (.259 , 4.560)
Marital Status		
Never Married	1.000	1.000
Divorced/Separated	1.057 (.428 , 2.614)	.799 (.264 , 2.414)
Married/Cohabiting	1.271 (.570 , 2.833)	2.185 (.779 , 6.130)
Work Status		
Not in Work Force	1.000	1.000
Employed	2.075 (.788 , 5.464)	.534 (.165 , 1.729)
Unemployed	2.327 (.633 , 8.554)	1.022 (.210 , 4.971)
Household Income		
0-12499	1.000	1.000
12500-22499	.424 (.120 , 1.506)	1.011 (.300 , 3.409)
22500-42499	.478 (.154 , 1.483)	2.989 (.811 , 11.014)
42500-74999	.980 (.272 , 3.534)	2.627 (.606 , 11.388)
75000+	1.118 (.275 , 4.542)	**
Caribbean Origins		
Spanish Caribbean	1.000	1.000
Haiti	1.225 (.383 , 3.916)	**
Jamaica	1.201 (.457 , 3.159)	.342 (.090 , 1.298)
Trinidad and Tobago	.714 (.216 , 2.353)	1.206 (.185 , 7.853)
Other	.925 (.350 , 2.444)	.409 (.110 , 1.527)
Age at immigration		
US Born	1.000	1.000
< 12 years	1.891 (.724 , 4.937)	.533 (.185 , 1.539)
13-17	6.511 (1.472 , 28.794)	2.246 (.413 , 12.214)
18-34	9.959 (2.926 , 33.895)	16.933 (1.701 , 168.560)*
35+	5.882 (1.223 , 28.290)	**
Years in the US		
US Born	1.000	1.000
<5 Years	.877 (.148 , 5.181)	**
5-10 Years	.460 (.123 , 1.725)	.732 (.064 , 8.388)
11-20 Years	1.755 (.478 , 6.441)	8.692 (.879 , 85.989)
20+ Years	.742 (.153 , 4.732)	2.098 (.849 , 4.646)
Nativity		
Foreign-born	1.000	1.000
US Born	1.817 (.288 , 11.471)	1.042 (.431 , 2.517)
Family Support	.971 (.908 , 1.038)	.980 (.905 , 1.061)
Family Conflict	1.175 (1.034 , 1.336)*	1.210 (1.031 , 1.419)*

* p<.05

** unable to estimate because there are very few cases

between the ages of 18-34 (OR = 16.933 95% CI 1.701 , 168.560) and a high family conflict index (OR = 1.210, 95% CI 1.031 ,1.419) were associated with a substance related diagnosis. Many variables, including Haitians, the \$75,000/year income bracket, and immigration at ages >35 years, did not include sufficient, if any, diagnosed women to produce a calculable odds ratio.

Some statements can be made on the general trends seen in this analysis. A higher prevalence of all disorders was associated with older age at immigration for women. For each set of disorders, women immigrating to the US as adults were significantly more likely to carry a diagnosis compared to US natives. This association was not seen in men for anxiety and mood disorders, but was present in substance disorders. A high family conflict score was associated with higher prevalences for both men and women in all mental disorders, although the family support index did not seem to have any effect. Increasing years of US residency slightly elevated one's risk of mood disorders in men and women compared to US natives; however, the higher risk of mental disorders associated with US-nativity compared to foreign-born was not observed in these analyses.

Chapter V

Discussion

It is interesting to note the differences between these results and those found by Williams et al. (2007) who evaluated this same dataset but without the variables on family dynamics. In their examination of mood disorders, Williams et al. found that being male, Hispanic, and foreign-birth, along with increasing years of US-residency, and older age at immigration were all protective against the development of any mood disorder. This current analysis does not indicate that any of those variables are risk factors in this sample because they did not return significant adjusted odds ratios. In women, Williams et al. found that hispanics were at greater risk of mood disorders compared to other groups but that all the protective factors seen in men remained the same. Similar to the males in this analysis, none of those variables placed females at a reduced risk except for having 13+ years of education. Williams et al. did not observe the effect seen in this analysis between age at immigration and mood disorders. In both men and women, US-born Caribbeans did not differ significantly in their risk of mood disorders compared to foreign-born individuals although this was an important finding of the previous analysis.

For anxiety disorders in men, Williams et al. found that those born outside the US, increasing years of US-residency, and older age at immigration carried a reduced risk. Although the second generation did not differ significantly from the first, the third or later generation were at a substantially elevated risk from the first. In this analysis, none of

these associations were apparent. Only Haitians appeared to have an increased risk of anxiety disorders, but all of the associations found by Williams et al. disappeared. For women, Williams et al. found that Hispanics and the third generation were more at risk for having any anxiety disorder, but an older age at immigration reduced the odds compared to those born in the US. In this analysis, Haitians were more likely than Hispanics to have a diagnosis but the associations with age at immigration were reversed. Women immigrating above the age of 18 had a much greater risk of an anxiety disorder compared to US-born and those immigrating at a younger age. Additionally, although Williams et al found a three-fold increase odds of anxiety disorders in women of later generations, this analysis did not observe this effect.

Williams et al. encountered similar problems analyzing substance disorders due to small sample sizes; however, they found that foreign-born men, increasing years of US-residency, and older age at immigration reduced risk. In this analysis, immigrating to the US over the age of 13 put one at greater risk of substance use, but the reduction seen in the other variables disappeared. In women, Williams et al. found that foreign-birth significantly reduced the odds of substance use, as well as increased years of US-residency and immigration at an older age. In this analysis, women immigrating between the ages of 18-34 had an elevated risk for a substance disorder diagnosis. In both men and women, the reduction of risk apparent in foreign-born individuals is nearly eliminated.

There are a number of factors that could explain the differences between these results and those found by Williams et al. This analysis included a number of additional variables including household income, years of education, age, and marital status, and

work status, all of which have been found to have an important impact on mental health (Hilton, Osborn, & Serjeant, 1997). The included control variables produced results largely consistent with what would be expected. For example, the literature indicates that lower socioeconomic status is inversely associated with the risk of mental illness (Holzer, et al., 1986). In this analysis, a higher household income reduces the odds of mood disorders in men and women, anxiety disorders in men, and substance disorders in men and women, although these reductions fail to meet statistical significance. The exceptions here are mood disorders in women in households making more than \$75,000 a year and anxiety disorders in women in the middle incomes. There is no significant effect of employment in any of the mental disorders.

Years of education is another important indicator of socioeconomic status although its effect in this analysis is not completely consistent with previous findings. Although more education reduces the risk for men and women when examining mood disorders, there are not significant differences in anxiety or substance disorders except for an increased odds of substance use in men with 13-15 years of education. Marriage is known to engender positive mental health benefits, especially in men (Westmaas, Ferrance, & Wild, 2006); however, this effect is not observed in this sample. Although prevalences of mood and anxiety disorders are not usually associated with any particular age group in the general population, substance disorders are more likely in those under 30 than other age groups (R. Kessler, et al., 2005). The prevalence of substance disorders does not fit this pattern, mood and anxiety disorders are consistent and there were no significant associations with any age group. Thus, it could be argued that the addition of these control variables is responsible for some of the discrepancies observed between this

and those presented by Williams et al.'s analyses, but since none of these indicators stood out as significant predictors, it is not likely they account for the changes.

These results do not fit within the larger theories concerning mental health and socioeconomics. As discussed earlier, the mental health of recent immigrants in this dataset was only slightly worse than African-Americans of similar social circumstances (Takeuchi, Alegria, et al., 2007; Williams, et al., 2007). This disparity can be understood through the social circumstances faced by immigrants in their home countries and is better than would be expected. The higher rates observed in later generations should be associated with poor socioeconomic conditions, but this effect is not observed. The odds of mental illness are not associated with any indicator of low economic achievement and are reversed for anxiety disorders in women of higher incomes. This indicates that the usual theories of mental illness and socioeconomics may not be applicable to this sample.

These results indicate that the primary difference between this analysis and the results found by Williams et al. (2007) are the indices describing family dynamics in this sample. Despite the available literature extolling the mental health benefits of a supportive family environment (Finch & Vega, 2003; Murphy & Mahalingam, 2004), the Family Support Index did not have an observable benefit in this dataset. However, the family conflict indicator significantly elevated the risk in all disorders for both men and women, and it is likely that this variable can account for the elimination of risk factors previously associated with this Caribbean sample. Thus, the most likely conclusion based on these results is that this effect is related to the interaction within the family and can be explained through a discussion of the acculturation process faced by successive generations of Caribbean immigrants.

Traditional non-western cultures often place emphasis on family solidarity and the children's responsibility to the family and there is a difference in coping mechanisms between the first and later generations. The first generation turns to family support when faced with personal problems and coping with the acculturation process. Later generations develop their lives within a new culture which results in differences in their values and attitudes towards family solidarity (Merz, et al., 2009). There is evidence that these differences in values, especially an American cultural emphasis stressing individuality over the collective, can be a source of conflict between the generations. This acculturation process creates a generation that does not wholly belong to one cultural group or another and this results in conflict within the family.

Caribbean immigrants come from a society where race and ethnicity have very different meanings; thus, the definition of heritage and ethnicity are in conflict with American culture (Livingston, et al., 2007). It would be interesting to examine if the dissonance within the family is associated with changing attitudes towards African American groups living in close proximity. Jackson et al. (2003) found that the relationships between African Americans and Afro-Caribbeans suffered from significant negative stereotyping and ethnocentrism. When Waters and Eschbach (1995) examined the same hypothesis, they found that these attitudes were not fully passed on to the second generations; rather, a hybrid cultural system was found in the children and grandchildren of Caribbean immigrants who formed social networks with their American peers but retained many of the dominant values of their families. It is possible that this could be evaluated with the NSAL.

One of the original hypotheses for this study was that the second generation would form dominant social bonds with their friends rather than with family and there were a number of questions in the survey that addressed this; however, an examination of these questions revealed a Cronbach's alpha too weak to construct a variable similar to those used in the family support and conflict. Despite this, it may be possible to examine the second generation's attitudes towards various American ethnic groups and compare this with those of recent immigrants. Anthropologists have found that individuals are more likely to identify their ethnicity based on the cultural context of their birth. In other words, those born outside the country are more likely to identify with their native culture, but their children born in the US will identify more with their American peers (Yip & Gee, 2008). Individuals tend to focus on the positive aspects of their social identity group and this strong sense of identity has been shown to buffer the impact of acculturation stress on depressive symptoms (Mossakowski, 2003) but also leads to family dynamics which may supersede the benefits of social identity. The NSAL includes questions on racial stereotypes that could be used to sort out the ways in which each generation constructs their social networks and how these attitudes might relate to dissonance between generational cultural values.

Another association not explained by family conflict is that between anxiety disorders and Haitian men and women. Previous studies discussed earlier noted the distinctive experience of Haitians from other Caribbean immigrant groups (Fawzi, et al., 2009). It is impossible to know the refugee status of the Haitians in this sample, but anxiety disorders associated with post-traumatic stress would account for the excess risk seen in this Haitian sample. The NSAL does include data on life experiences prior to

immigration including events that may result in a PTSD diagnosis. Future analyses could focus on the specific life experiences that differentiate the lives of each Caribbean immigrant group to see how the experiences pre-immigration effect the results seen in this discussion.

The final variable left unexplained is the increasing risk of all disorders associated with age of immigration for women. For anxiety and mood disorders, immigrating to the US as an adult carried with it a higher risk than what is seen in native-born women; in fact, this was the biggest predictor of mental health problems in this analysis. The cause of this risk certainly deserves more attention, but studies of other immigrant groups may point to possible reasons for this risk.

Studies of Asian immigrants have noted the significant increase in risk of stress-associated mental disorders in women forced to split their lives between traditional and American cultures. Women in Korean communities must maintain their traditional household responsibilities as well as functioning in the western workplace. The conflict between these two roles has previously been associated with higher rates of depression and anxiety (Park & Bernstein, 2008) and this same process deserves some discussion for this sample. Culture is developed and internalized early in life, and the acculturation process becomes more difficult and stressful as one ages (Finch & Vega, 2003). Livingston et al. (2007) reported similar results in Jamaican populations in Washington DC and attributed this gender disparity in mental disorders to ways of handling acculturative stress. Women were more likely to report adjustment issues due to loneliness and personal problems produced by the stress of living in a new society. Unlike men, women were less likely to form strong intracultural relationships within their

communities, thus fulfilling conflicting social roles without the mitigating benefits of strong social bonds.

A limitation of this analysis was that it did not incorporate more of the acculturation process experienced by each generation, specifically how ethnic minorities may relate to dominant American culture. Finch et al. (2000) described how different generations experience discrimination in American society. They found that the first generation immigrant may have lower expectations for income, employment, and social achievement, but that these lower expectations are not passed on to their children. As a result, later generations may be imbued with high social expectations but lower social achievement due to the effects of discrimination. As discussed earlier, Afro-Caribbeans and African-American ethnicities are often conflated, and African-Americans have historically faced severe discrimination. Finch et al. also found that the higher the degree of acculturation, the more damaging the effects of discrimination because of these expectations. This study did not evaluate the degree of social and ethnic identity and the effects or degree of subjective discrimination, but this no doubt plays an important role in the stresses of assimilating into society. Future analyses should address these variables within the NSAL.

Another limitation of this study is that it fails to establish any sort of directionality between the associated variables. For instance, although family conflict was significantly associated with all mental disorders in men and women, it is impossible to determine which came first. It is as perfectly reasonable to assume that the mentally ill may experience more family conflict as a result of their mental illness as it is to argue the

opposite. In fact, a review of the psychiatric literature demonstrates that both may be true, but the extent of either cannot be revealed with this type of community survey.

Finally, it is important to know how traditional cultural beliefs of mental illness may account for these findings. Although the validation study of DSM-IV diagnoses used in the NSAL has been discussed, previous studies have found that cultural attitudes may influence how an individual cognitively appraises his or her mental state (Chen & Mak, 2008). Although the CIDI has been validated cross culturally (R. C. Kessler, et al., 2004), the instrument still relies on subjective appraisals of emotional problems but diagnosed through Western criteria and this may skew the prevalences of disorders in the first generation.

These results have implications for how mental healthcare workers can approach service provision in Caribbean ethnic communities. First, it is important to note that the healthcare community is not adept at diagnosing mental health problems in culturally discordant populations. Chung et al. (2003) found that general medical practitioners are often unable to recognize psychiatric distress in ethnically diverse populations and are thus unable to treat or refer for psychiatric services. They screened patients in a waiting room for major depression before they saw their doctor and then simply asked the physician “Do you believe the patient has an emotion/psychiatric problem?”. They found that physicians are inadequate in recognizing psychiatric distress in cultural groups other than their own. However, previous studies have found that in most immigrant groups, including Caribbeans, a primary care provider, a family physician, or nurse practitioner, is in the best position to recognize emotional distress (J. S. Jackson, et al., 2007). Thus, it

is important to educate primary care providers on recognizing mental illness in later generation Caribbean immigrants and address the risk that family conflict may play.

Second, once psychiatric problems have been identified, a culturally appropriate treatment plan should be developed. Non-Western, collectivist cultures are more likely to attribute mental health problems to internal and personal causes, although Western counselors often address mental illness as it relates to external interactions (Chen & Mak, 2008). When dealing with family dynamics in a clinical situation, counselors should take into account the differences in the way each generation constructs their own emotional health. US-born Caribbeans may describe their mental health more in terms of the Western perspective, but this will be in conflict with the beliefs of their parents and grandparents. Counselors should work to address these cultural differences in describing mental illness as well as resolve the intercultural conflict that results from the acculturation process.

The results presented in this analysis indicate that family dynamics play an important role in the mental health of Caribbean immigrants. Compared to previous analyses of the same dataset, the family conflict index eliminated the increase in risk associated with the second and third generation. This has important implications in understanding the immigrant paradox others have observed. Although many have assumed that something about the acculturation process can account for the higher risk of mental disorders in later generations, this is the first analysis of Caribbeans that has demonstrated that our point of focus for addressing this problem may lie within the family.

Fortunately it is promising that numerous studies have documented an increase in mental health service use among all immigrant groups (Alegria, Mulvaney-Day, Woo, et al., 2007; Takeuchi, Zane, et al., 2007) including Caribbeans (J. S. Jackson, et al., 2007) and this means that family counselors are already in a position to address this problem. Furthermore, it is important that the primary care providers and social workers associated with Caribbean immigrants be aware that there is a higher prevalence of mental disorders in later generations and appropriate referrals should always be forthcoming. Educators, social service workers, and primary care providers should be aware that this is a problem in the Caribbean community but that the problem may be addressed through confronting the dynamics between the generations.

Additionally, these results indicate the importance of distinguishing between minority and immigrant groups. Frequently the immigrant paradox is referred to as a monolithic feature of the immigrant experience, but there are important variations between different immigrant groups. Further analysis is recommended to see whether the results presented here can be generalized to Latinos or Asians, although the literature suggests that it is possible. Finally, the mental health problems of Caribbean immigrants must not be conflated with those of African-Americans even though many community surveys often place the two into a single category. Despite the fact that second and third generation Caribbean immigrants may incorporate themselves into existing African-American communities, the emotional process of acculturation continues. The distinction between the two groups must be made in all community health surveys because these ethnic groups present with distinct health needs that require a targeted and culturally appropriate remedy.

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