THE CATHOLIC UNIVERSITY OF AMERICA

Socioeconomic Status, Social Capital, and HIV Sexual Risk Behavior:
A Study of African American and Latina Women

A DISSERTATION

Submitted to the Faculty of the
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By

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Women of color, especially African Americans and Latinas, account for the majority of HIV incidence and prevalence among women in the United States. Most HIV infections among women are contracted through heterosexual contact. Consequently, promotion of consistent condom use is a key HIV prevention strategy. U.S. prevention interventions for women typically focus on changing individual behaviors. However, the literature has documented a number of key social determinants of HIV vulnerability among women, including socioeconomic status (SES) and social capital. Understanding how these distal and intermediary social factors affect individual sexual risk is crucial to developing effective structural HIV prevention interventions for women.

The purpose of this study was to examine the independent and interactive effects of SES and social capital on condom use among African American and Latina women. The study applied a social determinants of health conceptual framework, drawing on Weber’s theory of social stratification and elements of Bourdieu’s, Coleman’s, and Putnam’s social capital theories.

Secondary data analysis was conducted on a sub-sample of 370 women drawn from a non-random sample of 512 women participating in the Gender-Economic Model (GEM) study, who were HIV negative, 18 years of age and older, and residents of the San Francisco Bay area.

The bivariate analyses showed that African American and Latina women differed significantly on age, income, educational attainment, seven of eleven social capital indicators,
and vaginal sex with their non-main male partner. The reduced logistic regression model showed that the likelihood of consistent condom use increased as income increased, but decreased as past month sociability increased. Three interactions were also significant predictors. As income rose the effect of past year, and past month civic participation on consistent condom use decreased. However, as education rose the effect of past month sociability on consistent condom use increased. The education-sociability interaction had the strongest effect.

The findings suggest that not all social capital is health protective. Moreover, the interactive effects of SES and structural social capital on consistent condom use were stronger than their independent effects. Implications for theory, research, social work practice, and policy regarding structural interventions are discussed.
This dissertation by Miguelina I. León fulfills the dissertation requirement for the doctoral degree in social work as approved by Joseph J. Shields, Ph.D., as Director, and Christine A. Sabatino, Ph.D., and Karlynn BrintzenhofeSzoc, Ph.D. as Readers.

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DEDICATION

This dissertation is dedicated to my father, Miguel Ángel León Cruz, who dreamed that one day I would become a “doctor,” but died before I could finish and make his dream come true. I know my beloved “Papi” is looking down upon me with much pride and love.
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Chapter 1: Introduction to the Study

The human immunodeficiency virus (HIV) and acquired immunodeficiency syndrome (AIDS) epidemic in the United States is a critical public health, social, and economic problem of particular concern to social work because it affects the health and well-being of over a million persons currently living with HIV/AIDS and has taken a toll of over 650,000 lives since it was identified in 1981 (Centers for Disease Control and Prevention [CDC], 2013a; CDC, 2013b). HIV is a retrovirus that destroys the blood cells crucial to the body’s immune system (World Health Organization [WHO], 2014, November). It is transmitted through bodily fluids (blood, semen, pre-seminal fluids, rectal fluids, and vaginal secretions), or breast milk of an infected person to an uninfected person (WHO, 2014, November). AIDS is the late stage of HIV infection, characterized by severe damage to a person’s immune system that makes it difficult for the body to fight diseases and certain cancers (WHO, 2014, November.).

While men, especially men who have sex with other men (MSM), and young Black men, bear the brunt of the epidemic in the United States, the proportion of women affected by HIV has grown steadily since 1985 and today, women account for about one-quarter of those living with HIV infection and about one-fifth of all new infections annually (CDC, 2013b). Over four-fifths of the women living with diagnosed HIV infection and those newly infected in the United States are women of color, primarily African American and Latina (CDC, 2013b). Moreover, heterosexual transmission is the leading mode of exposure to HIV among women, accounting for
nearly three-quarters of infections among those living with diagnosed HIV and more than four-fifths of infections among those newly diagnosed (CDC, 2013b).

The glaring racial/ethnic, gender, and socioeconomic disparities characterizing the HIV/AIDS epidemic in the United States pose disturbing social justice issues for the social work profession because they impact the most marginalized, vulnerable, and disadvantaged groups in American society. These HIV/AIDS disparities represent avoidable and remediable differences in health that are unfair, unjust, and therefore inequitable. Consequently, efforts to understand and eliminate inequities in HIV/AIDS are a matter of social justice of particular concern to social workers who are mandated by the (National Association of Social Workers [NASW], 2008) to work towards social justice with all people, but especially the most disadvantaged, vulnerable, marginalized, and oppressed groups.

**Problem Statement**

From its onset, the HIV/AIDS epidemic in the United States “was striking the poorest and most marginalized women, predominantly women of color in the inner cities of the northeastern seaboard” (Exner, Dworkin, Hoffman, & Ehrhardt, 2003, p. 116). Today, the overwhelming majority of women with HIV infection and AIDS in the United States are young, poor, women of color, mostly residing in the southern and northeastern regions of the country, who have contracted HIV through heterosexual contact (CDC, 2014a; Bozzette et al., 1998).

In the mid-1980s, at the height of the epidemic in the United States, the annual number of new HIV infections (incidence) was about 130,000 (CDC, 2014c). Since then, the incidence of HIV infection has been reduced by more than two-thirds to approximately 50,000 annually and has remained stable in recent years (CDC, 2014c). In 2011, women accounted for 21% (10,512)
of the 50,007 new cases of HIV infection reported in the United States among adults and adolescents (CDC, 2013b). Comparing the racial/ethnic distribution of new diagnoses of HIV infection reported among adolescent and adult females in 2011 with their distribution in the U.S. female population in the same year, disturbing disparities are highlighted for African American women. While African American women accounted for only 12% of the female population, they accounted for 64% of the new diagnoses of HIV infection among women (CDC, 2013b). In contrast, White women accounted for 66% of the female population, but they were only 17% of the new diagnoses of HIV infection (CDC, 2013b). The proportion of new diagnoses of HIV infections were comparable to their representation in the female population for Latinas (15% vs. 15%), American Indians/Alaska Natives (1% vs. 1%), Native Hawaiians/Other Pacific Islanders (<1% vs. <1%), and women of multiple races (1% vs. 1%), but lower proportions for Asians (2% vs. 5%) (CDC, 2013b).

Rates per 100,000 population provide a better picture of the disparities in the distribution of new diagnoses of HIV infections among women. The rate was highest for African American women (40.0), followed by Latinas (7.9), women of multiple races (7.5), and American Indian/Alaska Native women (5.5) (CDC, 2013b). In contrast the rate was lowest among White women (2.0), followed by Asian women (2.3) and Native Hawaiian/Other Pacific Islander women (3.9) (CDC, 2013b). Put another way, the rate of new diagnoses of HIV infection for African American women was five times higher than the rate for Latinas and women of multiple races, seven times higher than the rate for American Indian/Alaska Native women, ten times higher than the rate for Native Hawaiian/Other Pacific Islander women, seventeen times higher than the rate for Asian women, and 20 times higher than the rate for White women (CDC,
2013b). Compared to the rate of new diagnoses of HIV infection for White women, the rate was nearly four times higher for Latinas, 3.75 times higher for women of multiple races, 2.75 times higher for American Indian/Alaska Native women, nearly twice as high for Native Hawaiian/Other Pacific Islander women but about comparable for Asian women (CDC, 2013b).

By the end of 2010, an estimated 888,921 adults and adolescents were living with diagnosed HIV infection (prevalence) in the United States. Females accounted for 223,045 or 25% of the persons living with diagnosed HIV infection in that year (CDC, 2013b). Over four-fifths of the women living with diagnosed HIV infection were women of color (60% African American; 18% Latina, 2% of multiple races, 1% Asian; and less than 1% each, American Indian/Alaska Native and Native Hawaiian/other Pacific Islander) (CDC, 2013b). Nearly three-quarters (72%) of the females living with diagnosed HIV infection in 2010 contracted the virus through heterosexual contact and one-quarter (25%) through injection drug use (CDC, 2013b). Approximately 2% of infections among these females were attributed to perinatal exposure, and less than 1% to other transmission categories (CDC, 2013b).

The toll of the epidemic in mortality is startling. From 1981, when the epidemic began, through the end of 2010, an estimated 658,992 persons with AIDS have died in the United States (CDC, 2013b). Of these deaths, an estimated 116,998 (18%) occurred among females (CDC, 2013b). During 2010, an estimated 19,343 deaths of persons with diagnosed HIV infection occurred (CDC, 2013b). Twenty-six percent of these deaths occurred among females (CDC, 2013b). The bulk of the deaths among women occurred among African Americans (64%), Whites (18%), and Hispanics (12%) (CDC, 2013b).
Before the mid-1990s people with HIV would progress to AIDS in just a few years and eventually die. However, research advances have led to the development of highly active anti-retroviral therapy (HAART), medications which slow down the destruction of the immune system and delay progression to AIDS (Palella, et al., 1998). Since the introduction of HAART in 1996, HIV/AIDS morbidity and mortality has been dramatically reduced, transforming AIDS from a terminal disease to a chronic illness (Palella et al., 1998; Strug, Grube, & Beckerman, 2002). As a result, people are living longer, often for decades, with HIV and AIDS and require on-going medical, as well as social work services to address the health, socioeconomic, and psychosocial challenges they experience living with a chronic disease (Strug et al., 2002).

Despite the advances made, the HIV/AIDS epidemic continues to exact a tremendous toll on U.S. society, not only in terms of human lives lost and the poorer quality of life for people living with HIV/AIDS, but also economically in terms of lost productivity as well as the high costs of prevention, medical care, support services, and research. In fiscal year 2012, the United States spent $21.4 billion in domestic funding for HIV/AIDS (Kaiser Family Foundation, 2013). Of that amount, 69.2% ($14.8 billion) was spent on HIV/AIDS-related health care, 13% ($2.8 billion) on cash and housing assistance, 13% ($2.8 billion) on research, and nearly 5% ($1.0 billion) on prevention (Kaiser Family Foundation, 2013). The large proportion of expenditures allocated to HIV/AIDS care can be explained by the high cost of HAART drugs, which account for nearly 75% of the total cost of care (Schackman, et al., 2006).

Since the advent of HAART, the federal government’s spending on HIV treatment has tripled, from $3.7 billion in fiscal year 1995 to $11.6 billion in fiscal year 2005 (Schackman et al., 2006). The cost of HIV treatment has increased significantly not only because HAART is
more expensive but also because people with HIV/AIDS are living longer as a result of the efficacy of these drugs. The total lifetime cost of treatment and care for an HIV-positive adult, based on a projected life expectancy of 24.2 years, from the time of entering treatment to death, has been estimated at $385,200 per person (Schackman et al., 2006). The exorbitant cost of HIV care underscores the need for greater investments aimed at preventing HIV infections in the first place. Investments in HIV prevention can save lives and also reduce the high cost of life-time HIV/AIDS medical care. For example, a recent study estimated that 361,878 HIV infections were averted by U.S. prevention programs during the period between 1991 and 2006, saving an estimated $129.9 billion (in 2009 dollars) in life-time medical care costs (Farnham, Holtgrave, Sansom, & Hall, 2010). Put another way, an estimated $360,000 is saved in the cost of providing lifetime HIV treatment for every HIV infection that is prevented (Farnham et al., 2010).

Despite the advances made over the past three decades, there is still no cure for AIDS nor is an effective vaccine to prevent HIV infection in sight. Consequently, prevention remains the primary means of reducing risk and averting transmission of HIV infection.

**Social Determinants of Health**

Over the past two decades, as the body of research on the social determinants of health has grown, public and private entities at the global and national levels have focused greater attention on addressing these determinants to reduce health disparities (Braveman, Egerter, & Williams, 2011; CDC, 2010; CSDH, 2008; Dean & Fenton, 2010; Dean & Fenton, 2013; White House, 2010; U.S. DHHS, n.d.). In 2008, the WHO’s Commission on the Social Determinants of Health (CSDH) released a report which documented widening disparities in health within and between countries across the globe and called on all governments to take action on the social
determinants of health in order to eliminate these disparities and achieve health equity within a
generation. These disparities, defined by the WHO’s CSDH (2008) as inequitable (i.e.,
avoidable or remediable differences in health among social groups that are therefore unfair and
unjust), arise from social determinants of health. According to the WHO (n.d.):

The social determinants of health are the circumstances in which people are born, grow
up, live, work and age, and the systems put in place to deal with illness. These
circumstances are in turn shaped by a wider set of forces: economics, social policies, and
politics (p. 1).

Socioeconomic status (SES) has been identified as a key social determinant of health. A
large body of evidence in the public health and social sciences literature has documented the
links between greater socioeconomic disadvantage and poorer health outcomes (Braveman et al.,
2011; Marmot, 2002; Marmot, 2005; Williams & Collins, 1995; Williams, 2005). Although less
extensive, there is a growing body of literature which also documents the associations between
SES and HIV/AIDS prevalence, incidence, survival after HIV diagnosis, mortality, and condom
use, revealing that those of lower SES relative to their higher SES counterparts experience
poorer outcomes (Albarracin & Plambeck, 2010; Bankole, Darroch, & Singh, 1999; CDC,
2013c; CDC, 2014b; Cunningham, et al., 2005; Denning, DiNenno, & Wiegand, 2011; Fife &
Mode, 1992a; Fife & Mode, 1992b; Holmes, et al., 2008; Ickovics, et al., 2002; Karon, Fleming,
Steketee, & De Cock, 2001; McDavid Harrison, Ling, Song, Hall, & Ling, 2008; McFarland,
Chen, Hsu, Schwarcz, & Katz, 2003; McMahon, Wanke, Terrin, Skinner, & Knox, 2011; Moreno
& El-Bassel, 2007; Reece, et al., 2010; Rubin, Colen, & Link, 2009; Saul, et al., 2000; Zierler, et
al., 2000).
Over the past two decades, along with the renewed interest in the mechanisms that connect social inequalities and health, the concept of social capital (i.e., resources derived from participation in social networks) as a social determinant of health has also received growing attention in the literature on health disparities (Hawe & Shiell, 2000; Kawachi, Subramanian, & Kim, 2008). This interest has generated an extensive body of research documenting the association between social capital and health using a wide range of indicators for both variables at different levels of analysis, in different countries, including the United States (Islam, Merlo, Kawachi, Lindström, & Gerdtham, 2006; Kawachi, Kim, Coutts, & Subramanian, 2004; Kim, Subramanian, & Kawachi, 2008).

However, the body of research on the association of social capital with HIV/AIDS is far less extensive. The majority of studies on the relationship between social capital and HIV/AIDS have been conducted at the individual-, household-, and population-level in sub-Saharan Africa, but the findings have been mixed (Gregson et al., 2011; Gregson, Terceira, Mushati, Nyamukapa, & Campbell, 2004; Pronyk, et al., 2008). The evidence of the relationship between social capital and HIV/AIDS in the United States is negligible. One U.S. study, using the measure of social capital obtained from Putnam’s public use dataset, found that state-level social capital was inversely associated with state-level AIDS case rates (Holtgrave & Crosby, 2003). The measure is based on 14 variables that include the structural (i.e., community organizational life, involvement in public affairs, volunteerism, and informal sociability) and cognitive (i.e., social trust) dimensions of social capital (Holtgrave & Crosby, 2003). Other U.S. studies have found associations between social capital and other factors related to sexual risk behaviors such as other STDs, adolescent pregnancy risk and protective factors, and teen pregnancy rates (Crosby

**HIV Prevention among Women**

Absent a vaccine against HIV infection or a cure for AIDS, prevention remains an important strategy for reducing new HIV infections among women in the United States. Over the last two decades, a number of evidence-based behavioral interventions aimed at individuals or small groups have been developed to prevent HIV infection among U.S. women and adolescent girls (Crepaz et al., 2009; Lyles et al., 2007). Most of these interventions have been based on existing rational-cognitive behavioral theories that stress an individual’s perceived risk, HIV knowledge, self-efficacy, and safer sex skills (Amaro, Raj, & Reid, 2001; Zierler & Krieger, 1997). These theories, which assume that sexual behaviors and interactions are initiated by and completely under the individual’s control, fail to recognize broader cultural and social contextual factors affecting sexuality and sexual behavior (Amaro, 1995). These interventions have been successful in reducing HIV risks through heterosexual contact by decreasing unprotected vaginal or anal sex, increasing condom use, or decreasing the number of sexual partners, and also among drug using women in reducing drug injection use or needle sharing (Crepaz et al., 2009; Lyles et al., 2007).

However, most have not addressed the contextual factors which affect the relational aspects of HIV risk among women such as cultural expectations, social norms, network patterns, gender roles, male partner attitudes towards safer sex, power imbalances in heterosexual relationships, gender-based and male-perpetrated violence against female partners, sexuality, cultural differences, and SES (Amaro, 1995; Amaro et al., 2001; Exner et al., 2003; Jenkins,
2000; Zierler & Krieger, 1997). Nor did these interventions address the broader structural factors which some scholars identified as increasing socioeconomic inequalities among women such as the growing income inequality in the United States since the 1970s, the feminization of poverty in the 1980s, and the dismantling of the welfare state and resulting cuts in social services, decreased access to health care, and growth of unstable and low-paying jobs, (Exner et al., 2003; Zierler & Krieger, 1997).

Since the mid-1990s’ HIV prevention researchers have focused greater attention on understanding the broader structural and social contextual factors that increase women’s vulnerability for HIV/AIDS (Amaro & Raj, 2000; Amaro et al., 2001). As a result, a significant body of research has documented social determinants of women’s risk of sexually transmitted HIV infection including gender relations and other determinants of social inequalities, such as race/ethnicity, SES, sexuality, and culture (Amaro & Raj, 2000; Amaro et al., 2001; Gómez, 2011). Significant work has also been done to develop HIV prevention interventions aimed at addressing gender-related and other contextual factors in which women’s/adolescent girls’ HIV risk is embedded (Amaro & Raj, 2000; Exner et al., 2003; Gómez, 2011). Moreover, a number of evidence-based HIV prevention interventions targeted to women at risk through heterosexual contact have integrated the theory of gender and power, and ecological or empowerment theories to address gender, relationship power dynamics, and other contextual factors that increase women’s risk of infection (DiClemente & Wingood, 1995; DiClemente et al., 2004; El-Bassel et al., 2001; El-Bassel et al., 2003; Ehrhardt et al., 2002; Wingood et al., 2004).

Despite the growing recognition and knowledge of the contribution of social determinants in shaping the HIV epidemic among women and the progress made in developing
interventions that address gender and relational issues, most HIV prevention efforts in the United States continue to be dominated by cognitive-behavioral interventions that seek to influence individual-level factors such as perceived HIV risk, knowledge, attitudes, behaviors, self-efficacy, and safer sex skills (Amaro & Raj, 2000; Dean & Fenton, 2010; Gómez, 2011). While such factors are important elements of successful individual sexual behavior change, they do not address the broader contextual factors that influence sexual relations between men and women that pose significant obstacles to individual behavior change (Gómez, 2011).

Notwithstanding the significant investments and progress in HIV prevention, treatment, and care made by the United States, the epidemic has not abated and more than 50,000 persons are infected with the virus annually of which 10,000 are women (CDC, 2013a). While the evidence indicates that behavioral interventions have been successful in reducing HIV risk behaviors, the high number of new HIV infections reported annually indicates these interventions have not been able to achieve sustained reductions in HIV incidence for the population as a whole nor for women (Dean & Fenton, 2010; Gómez, 2011).

Structural Interventions

Research on the social determinants of health has led to growing recognition and understanding in the field of HIV prevention that a variety of social and structural factors shape the patterns and distribution of HIV among different groups and populations (Dean & Fenton, 2010). There is also growing evidence and agreement in the field that individual-level or small group behavioral interventions are more successful when they are combined with interventions that also address the social and structural factors that shape vulnerability to HIV infection and
influence individual risk behaviors (Auerbach & Coates, 2000; Coates, Richter, & Caceres, 2008; Dean & Fenton, 2010; Gupta, Parkhurst, Ogden, Aggleton, & Mahal, 2008).

This growing recognition and knowledge has led to greater interest in developing structural HIV prevention interventions. Unlike individual behavioral risk reduction interventions, structural interventions are designed to address the underlying social and structural determinants that create inequitable social arrangements and power relations based on factors such as race/ethnicity, gender, sexual identity, and economic class (Auerbach & Coates, 2000; Coates et al., 2008; Gupta et al., 2008). Examples of the types of structural approaches that have been utilized in HIV prevention include interventions aimed at: effecting policy or legal changes; enabling environmental changes; shifting harmful social norms; mobilizing social and political change; and empowering communities and groups (Adimora & Auerbach, 2010). While interest in structural interventions is growing, most research and programs in this arena have focused on interventions in developing countries (Adimora & Auerbach, 2010, Gupta et al., 2008; Sumartojo, 2000). Consequently, there has been limited progress in developing and integrating structural interventions in United States prevention efforts (Adimora & Auerbach, 2010, Gupta et al., 2008; Sumartojo, 2000).

Purpose of the Study

The purpose of the study is to examine the effects of two key social determinants on the HIV-related sexual risk behavior of African American and Latina women. Specifically, the study examines the independent effects and interactions of SES and social capital on HIV sexual risk behavior of African American and Latina women. Secondary data analysis will be conducted using the baseline dataset of 512 socio-economically diverse African American (N = 272) and
Latina ($N = 240$) women from the Gender-Economic Model (GEM) of HIV Risk in African American and Latina Women study. Analyses will be conducted on a subsample of 370 (196 African American and 174 Latina) women for which there is complete data. GEM is a longitudinal study funded by the National Institutes of Health (NIH) that examines the extent to which the intersection of socio-culturally prescribed sexual gender norms and socio-economic context are associated with sexual risk behaviors among African-American and Latina women in the United States (Gómez, Chang, & Martinez, 2008). The focus of the present study is consistent with social work’s focus on enhancing individual well-being by taking into account and addressing factors in the individual’s social and economic environment that negatively influence HIV-health outcomes among two vulnerable and socially disadvantaged sub-populations of women in the United States. It is also consistent with social work’s defining value of social justice.

**Research Questions and Hypotheses**

The study will address the following questions:

1) Are there differences between African American and Latina women in SES, social capital, and HIV-related sexual risk behavior?

2) Are SES and social capital independently associated with HIV-related sexual risk behavior among African American and Latina women?

3) Is there an interaction effect of SES and social capital that moderates the independent effects of each predictor on HIV-related sexual risk behavior among African American and Latina women?

Based on these three research questions the following hypotheses were developed:
H1: Compared to Latinas, African American women will have higher SES, lower cognitive social capital, higher structural social capital, and higher frequency of unprotected sex.

H2: Controlling for socio-demographic variables, SES, cognitive social capital, and structural social capital will each be significantly, inversely, and independently associated with unprotected sex among African American women and Latinas.

H3: There will be a significant interaction of SES and cognitive social capital as well as SES and structural social capital such that the level of one variable will moderate the effect of the other variable on unprotected sex among African American women and Latinas.

Significance for Social Work

The primary mission of the social work profession is to enhance the well-being of individuals and groups, meet their basic needs, and in particular, address the needs and promote the empowerment of those who are most marginalized, vulnerable, oppressed, and those living in poverty (NASW, 2008). Social justice is one of the core values guiding social work and the defining feature of the profession (NASW, 2008; Finn & Jacobson, 2008). Social work’s focus on enhancing well-being includes health, which has been holistically defined by the WHO as “a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity” (1948, p. 1). The HIV/AIDS epidemic presents a significant challenge to the well-being and health of women in the United States, especially African American and Latina women who experience disproportionately high rates of morbidity and mortality. The vulnerability of African American and Latina women is heightened by the multiple layers of discrimination and disadvantage they experience based on their race/ethnicity, gender, and SES. These structural and social factors are outside their individual control and negatively affect their ability to avoid
the risk of HIV infection and its health-damaging consequences (UNAIDS, 1998). This study is particularly significant to social work because it aims to contribute to an understanding of how two key social determinants of health, SES, and social capital, independently and/or in combination, affect HIV sexual risk among these two highly vulnerable populations.

Understanding and addressing the factors that contribute to disparities in HIV/AIDS is an important goal for public health but also for social work because of the profession’s historical involvement in promoting public health. Social workers’ involvement in public health dates back to the early 20th century, when they worked in settlement houses, tackling the control of communicable diseases, promoting maternal and child health, and advocating for reforms to address the social and economic conditions contributing to major public health problems (Ruth, et al., 2008; Sable, Schild, & Hipp, 2012). HIV/AIDS has been a major concern and area of practice for public health social workers, who employ an epidemiologic approach to prevent, address, and solve social health problems, emphasizing prevention and health promotion (Ruth et al., 2008; Sable et al., 2012). Social workers have been involved in addressing the social and public health challenges of HIV/AIDS since the epidemic began in the early 1980s, working as direct service providers, program planners, administrators, and evaluators, as well as researchers, policy analysts and advocates (Aronstein & Thompson, 1998; Kalogerogiannis, Hibbert, Franco, Messam, & McKay, 2008; Newman, 2008). Both social work and public health are concerned with enhancing the well-being of individuals and populations and achieving social justice by tackling and ameliorating health problems that are rooted in social and economic inequalities (Ruth et al., 2008; Sable et al., 2012).
Conceptually, the social determinants of health framework is consistent with social work’s historic focus on person-in-environment which views individual well-being and functioning within a social context and attends to “the environmental forces that create, contribute to, and address problems in living” (NASW, 2008, p. 1). Ecological theory and the Life Model of social work practice which operationalized it have provided social workers with a conceptual framework to simultaneously focus on persons and their environments and their reciprocal relationships in their direct work with individuals, families, and groups, community organization and development, and policy practice (Gitterman & Germain, 1976; Gitterman & Germain, 2008). Ecological theory has also been applied in research and interventions in the fields of public health and health promotion to understand and address how the dynamic transactions between individuals and groups and their physical and social environments affect their health (Lounsbury & Mitchell, 2009; McLaren & Hawe, 2005; McLeroy, Bibeau, Steckler, & Glanz, 1988; Richard, Gauvin, & Raine, 2011; Stokols, 1992; Stokols, 1996).

More broadly, the focus of this study aligns with national health goals as outlined in Healthy People 2020, the 10-year science-based national objectives for improving the health of all Americans (U.S. DHHS, n.d.). Two of its four overarching goals are aimed at achieving health equity, eliminate disparities, and improving the health of all groups, to create social and physical environments that promote good health for all (U.S. DHHS, n.d.). Released by the Obama administration in 2010, the National HIV/AIDS Strategy for the United States (NHAS), acknowledges the persistence of disparities in HIV prevention and care among racial/ethnic and sexual minorities and includes reducing HIV-related disparities and health inequities as one of its three main overarching goals (White House, 2010). Moreover, in 2010, the CDC’s National
Center for HIV/AIDS, Viral Hepatitis, Sexually Transmitted Disease, and Tuberculosis Prevention (NCHHSTP) adopted the WHO’s CSDH (2008) conceptual framework and included reducing health disparities in several infectious diseases, including HIV and promoting health equity by addressing social determinants as goals in its 2011-2015 strategic plan (CDC, 2010).

Since most of the research on the effects of social capital and SES on HIV sexual risks among women has been conducted in sub-Saharan Africa, this study may help to expand knowledge and understanding of the dynamics of social capital and SES and how they shape women’s sexual risk behaviors within the U.S. context. Such information, coupled with the values, approaches, and theories central to social work practice (i.e., social justice, person-in-environment, systems theory, ecosystems, life model, empowerment) may be valuable in guiding the development of more effective structural interventions aimed at eliminating HIV-related health inequalities related to social capital and SES among African American and Latina women (Kondrat, 2008; Marshall et al., 2011; Strug et al., 2002). Moreover, social workers with skills and practice experience in the areas of community development and community organizing can play an important role in designing and evaluating structural interventions to build social capital and promote economic development among ethnic and racial minority women and communities.

The findings from this study may also provide important information to guide the development of public policies and programs that address the effects of social capital and SES in HIV prevention efforts. Moreover, social workers may utilize the findings to mobilize communities and advocate for policies, funding, and programs that address the social determinants of health, support community capacity building, promote economic development and build social capital in socially and economically disadvantaged communities.
disproportionately affected by HIV/AIDS. Finally, the findings of the study may raise important unanswered questions that may guide future research in this area.

Chapter Summary

The current chapter provided an overview of the overall trends in the HIV/AIDS epidemic in the United States, by gender, race, and ethnicity and modes of transmission, and it highlighted the social and economic costs of the epidemic. It then focused on the specific HIV-related health disparities experienced by women of color, especially African Americans and Latinas and described the primacy of heterosexual transmission among women. The chapter also discussed growing evidence of the association between SES and HIV incidence, prevalence, survival, and mortality. The chapter underscored the importance of HIV prevention in reducing the high costs of HIV care, discussed the predominance of behavioral interventions aimed at reducing HIV-related sexual risk behaviors, and the described characteristics of interventions specifically targeted to women. The growth of interest in and research on the social determinants of health, including SES and social capital was described. The purpose of the study was presented, along with the major research questions it addresses and the corresponding hypotheses. The chapter then discussed the significance of the study in terms of the social work profession’s commitment to promote well-being and social justice. The chapter also highlighted the significance of the study for social work practice, policy advocacy, and research and the role social workers can play in developing structural HIV prevention interventions to address social determinants of health in general, and SES and social capital in particular.

Chapter 2 begins by presenting an outline and diagram of the social determinants of health conceptual framework and theoretical underpinnings of SES and social capital. The social
determinants of health conceptual framework is described and the concepts of social stratification and SES are defined. Weber’s conceptualization of social stratification is described and its application to health research in terms of SES is discussed. The research regarding the association of SES with health and with HIV/AIDS is reviewed and explanations regarding the mechanisms linking these variables are discussed. The concepts of race and ethnicity are defined and their application in health research is discussed including the controversy regarding race as a biological or socially constructed concept. The issues associated with the use of the federally mandated categories of race and ethnicity in health research are briefly discussed. The evidence of the associations of race/ethnicity with health and with HIV/AIDS, and of race/ethnicity, SES, and health/HIV is reviewed and explanations of the mechanisms linking these variables are presented. The concept of social capital is introduced and its evolution is discussed. The seminal theoretical works of Pierre Bourdieu, James S. Coleman, and Robert D. Putnam are presented and each of their social capital theories are discussed. Different approaches to social capital are discussed as well as the dimensions and forms of social capital. The evidence regarding the relationships between social capital and health and HIV/AIDS is presented, and explanations regarding the mechanisms linking these variables are discussed. Then, HIV sexual risk behavior is defined, and the literature regarding heterosexual transmission of HIV and the factors heightening the risk for women is reviewed. Evidence of the patterns of condom use among women in the United States, and the factors associated with condom use such as age, partner type, and relationship status is reviewed with a focus on African American women and Latinas. The chapter concludes by summarizing the conceptual framework for the study.
Chapter 3 outlines the study’s methodology, describing the original study’s design, recruitment of participants, sampling, and data collection procedures. It then describes how the predictor and criterion variables are operationalized and measured and the data analysis plan.

Chapter 4 presents the findings of the data analyses. The final chapter discusses the findings and the limitations of the study and concludes with a discussion of the implications of the findings for social work practice and policy and suggests areas for future research.
Chapter 2: Review of the Literature

This chapter presents the conceptual framework that will be used to examine the independent and interactive effects of socioeconomic status (SES) and social capital on African American and Latina women’s HIV sexual risk behavior. It begins by presenting the social determinants of health conceptual framework and discussing its component parts. The next section introduces and defines the concept of SES, based on Weber’s multidimensional conceptualization of social stratification (class, status, and party). It then discusses how Weber’s concepts of class and status are applied to measures of SES used in health research. The evidence of the relationship between SES and health is reviewed, including U.S. studies of SES and HIV/AIDS; SES; women and HIV/AIDS; and sub-Saharan studies on SES and health. This section concludes with a summary of the various explanations of the mechanisms linking SES and health.

The concepts of race and ethnicity are defined and their application in health research is discussed including the controversy regarding race as a biological or socially constructed concept as well as the issues associated with the use of the federally mandated categories of race and ethnicity in health research. The review goes on to present the evidence regarding the relationship between race/ethnicity and health, race/ethnicity, SES, and health, and race/ethnicity and HIV/AIDS among women. This is followed by a description of the various explanations of the mechanisms linking race/ethnicity and health. The issues associated with the use of race as a proxy for SES, and those related to SES as a confounder of the relationship between race/ethnicity and health are highlighted.
The next section introduces the concept of social capital and its evolution and discusses the seminal theoretical work of Pierre Bourdieu, James S. Coleman, and Robert D. Putnam. This is followed by a discussion of the network and communitarian approaches to social capital and a presentation of the dimensions (i.e., cognitive and structural) and forms (i.e., bonding, bridging, and linking) of social capital. Then, the evidence from individual-level studies conducted in the United States and other countries, regarding the relationship between cognitive and structural social capital and is reviewed. The findings of the few U.S. studies on the relationship between social capital and HIV/AIDS and the larger body of studies conducted in sub-Saharan Africa countries are presented. Studies addressing the relationship between social capital, SES, and health are also reviewed. Explanations of how social capital might affect health and HIV/AIDS in particular are then presented. The chapter concludes with a summary of the conceptual framework.

**Conceptual Framework**

This study draws on a social determinants of health conceptual framework, Weber’s (1963) conceptualization of social stratification, and elements of Bourdieu’s, Coleman’s, and Putnam’s theories of social capital to guide the examination of the relationship between SES, social capital, and HIV sexual risk behavior among African American and Latina women.

*Figure 1.* represents the conceptual framework for the study. Age and relationship status are the control variables. Race/ethnicity, SES, and social capital are the independent variables. Sexual risk, operationalized as unprotected sex, is the dependent variable. The solid, single-headed arrows represent the independent effects of race/ethnicity, age, relationship status, SES, and social capital on the dependent variable. The dashed, double-headed arrow represents the
interaction between SES and social capital, and the dashed, single-headed arrow represents the effect of this interaction on unprotected sex.

*Figure 1.* Conceptual framework: Social determinants of unprotected sex among African and Latina women.
**Social determinants of health.** The concept of social determinants of health was introduced in the 1970s by researchers who critiqued the over-emphasis in public health research and policies on medical care and personal lifestyles and behaviors as the key factors explaining the health of individuals and populations (Graham, 2004; Graham, 2009). They made the case for refocusing research and policy away from such proximal factors and toward more distal factors such as the broader social, economic, and political structures and processes that played a larger role in determining health (Graham, 2004; Graham, 2009).

Social determinants of health are contextually and historically contingent societal-level factors that influence health such as living and working conditions and the broader social, economic, and political structures in which they are embedded (Graham, 2009). The concept also refers to the specific “pathways by which societal conditions affect health and that potentially can be altered by informed action” (Krieger, 2001, p. 697). Over the past several decades a number of models have been developed, mostly in the United Kingdom, Canada, and Scandinavia, to illustrate the ecological nature of health and to explain how social factors interact at different levels to affect health and produce inequalities in health (Graham, 2004; Graham, 2009; Institute of Medicine, 2003).

Although models of social determinants of health differ in design and intricacy, most conceptualize health as an outcome of causal processes that originate in the social structure in which social position is embedded (Graham, 2004). The most distal factor in the models is the structure of society which has been referred to by a variety of terms, such as, social structure, structural factors, general socioeconomic, cultural, and environmental conditions, or social
context (Graham, 2004). These broad societal-level factors influence health through an individual’s social position (i.e., location within the society’s social hierarchies), which in turn affects health through a set of intermediary social factors, including the concomitant living and working conditions as well as social and community networks (i.e., family, friends, neighbors, community groups) (Graham, 2004). Below these intermediary social factors are individual-level ones including health-related lifestyles and behaviors and physiological factors (Graham, 2004). At the most proximal level, most models include biological and genetic factors that mediate the effects of social determinants on health (Graham, 2004).

Social stratification refers to the systematic hierarchical ranking of individuals and groups in a society according to social categories based on particular attributes (e.g., socioeconomic status, race, ethnicity, national origin) (Bartley, 2003). Social stratification leads to the unequal distribution among individuals and groups of valued resources and rewards (e.g., wealth, power, prestige), which enable them to obtain desired goals or goods such as health (House & Williams, 2000; Williams, 1990). Consequently, an individual’s social position, shaped by the society’s system of social stratification, is a key determinant of health (Graham, 2004). According to Graham (2004) social position “marks the point in the model at which societal-level resources enter and affect the lives of individuals” (p. 107). An individual’s social position determines his or her access to social resources such as education, employment opportunities as well as political influence and material resources such as income and property (Graham, 2004). In turn, an individual’s social position shapes his or her access and exposure to a set of intermediary factors that include the social and material environments of home, neighborhood, community, and workplace as well as behavioral and physiological factors.
These intermediary factors can be either health-promoting or health-damaging (Graham, 2004). Individual vulnerability to illness and injury is affected by these intermediary factors and the social positions that shape them (Graham, 2004). Illness and injury also have consequences for social position, as they can restrict opportunities for education and employment as well as adversely affect earnings, job security, or retirement benefits (Graham, 2004).

Based on an extensive review of the literature on the factors that contribute to HIV/AIDS vulnerability and risk, Poundstone, Strathdee, and Celentano (2004) developed a social ecological model that takes into account the structural, social, individual, and biological determinants of HIV/AIDS. Incorporating a social epidemiological perspective, the model views structural and social factors as fundamental causes of HIV/AIDS and as integral parts of the analysis (Poundstone et al., 2004). They define structural factors as broad social, cultural, economic, and political forces, social stratification, structural violence (i.e., racism, sexism, homophobia, xenophobia, stigma and discrimination), and policies and laws, “that in turn affect HIV transmission dynamics and the differential distribution of HIV/AIDS” (Poundstone et al., 2004, p. 22). They also identified key social factors such as social capital, cultural context, neighborhood effects, and social networks (Poundstone et al., 2004). These factors are viewed as “critical pathways through which community and network structures link persons to society” and as central to understanding the diffusion and differential distribution of HIV/AIDS in population subgroups (Poundstone et al., 2004, p. 22). At the individual-level biological, demographic, and behavioral factors may influence an individual’s risk of contracting HIV as well as disease progression (Poundstone et al., 2004).
**Socioeconomic status.** SES and other terms such as social class, socioeconomic position, and social status have been used interchangeably in the health inequalities literature to describe a key social determinant of health (Galobardes, Shaw, Lawlor, Lynch, & Davey Smith, 2006). However, these terms have different theoretical foundations and interpretations (Galobardes et al., 2006; Krieger, Williams, & Moss, 1997). While the concepts of social class and socioeconomic position are more commonly used in the European literature, the concept of SES is more frequently used in the American literature on health inequalities/disparities (Braveman, et al., 2005). Therefore, the term SES will be used in this study to represent the position of individuals within a system of stratification that differentially distributes valued socioeconomic resources such as income, education, and occupation.

Although definitions of SES vary, they reflect some important common elements such as the multidimensional nature of the concept, the location of an individual or group within a social hierarchy, and differential distribution of, or access to, valued resources and/or status/prestige (Adler, et al., 1994; Adler & Rehkopf, 2008; Braveman et al., 2005; Gallo & Matthews, 2003; House & Williams, 2000; Krieger et al., 1997; Mackenbach & Kunst, 1997). According to Mackenbach and Kunst (1997), “SES refers to an individual's relative position in the social hierarchy and can be operationalized as level of education, occupation, and/or income” (p. 758). Similarly, Adler and Rehkopf (2008) define SES as “an individual or group’s position within a hierarchical social structure, measured by variables including education, occupation, income, wealth, and place of residence” (p. 238). House’s and Williams’ (2000) definition of SES includes the elements of multidimensionality and social location, but also it includes the notion of differential distribution of resources: “individuals' position in a system of social stratification
that differentially allocates the major resources enabling people to achieve health or other desired goals. These resources centrally include education, occupation, income, and assets or wealth” (p. 83).

*Weber’s conceptualization of social stratification.* Theoretically, the concept of SES is primarily grounded in Max Weber’s (1963) multidimensional theory of social stratification which emphasizes the importance of power in creating and maintaining hierarchical arrangements (Galobardes et al., 2006; Hughes, Sharrock, & Martin, 2003; Kerbo, 2006; Lynch & Kaplan, 2000). Weber (1963) defined power as “the chance of a man or a number of men to realize their own will in a communal action even against the resistance of others who are participating in the action” (p. 42). He posited that social stratification is a manifestation of the unequal distribution of power among different groups in society based on three distinct yet interrelated sources: class (economic), status (social), and party (political) (Hughes et al., 2003; Hurst, 2004; Weber, 1963).

*Class.* Weber (1963) defined “class” as an objective economic category referring to an aggregate of individuals who share the same “class situation” (Weber, 1963). He noted that classes are not necessarily self-conscious groups, but merely represent the potential for communal action (Weber, 1963). Individuals in the same class situation: (1) have in common a specific causal component of their life chances, in so far as

(2) this component is represented exclusively by economic interests in the possession of goods and opportunities for income, and

(3) is represented under the conditions of the commodity or labor markets (Weber, 1963, p. 43). In capitalist societies, individuals compete on the market for economic rewards.
Individuals in the same class situation have similar life chances (i.e., the typical probability of accessing scarce and valued resources and thereby leading a certain type of life) (Hughes et al., 2003; Kendall, 2009; Weber, 1963). Their class situation is determined by their “market situation,” which refers to their position in the market in terms of the types and quantity of resources (e.g., property, skills, credentials, expertise, education) they bring to exchange and the supply and demand for these on the market (Lynch & Kaplan, 2000; Weber, 1963).

Weber (1963) argued that property and lack of property are the causal components of an individual’s life chances and hence the basic categories of all class situations. Property owners have opportunities to increase their wealth and capital by income derived from rents, interest, or dividends or by converting their property into capital and investing in entrepreneurial ventures to make profits (Weber, 1963). This gives property owners more power to access valued and scarce goods and services, and thus better life chances than the propertyless who have only their labor or services to exchange on the market (Weber, 1963). Weber argued that the class situations (and therefore life chances) of property owners can be further differentiated by the type of property they have at their disposal for returns (e.g., land, mines, ships, buildings, factories, equipment, livestock, patents, copyrights) (Weber, 1963).

Weber (1963) also argued that the class situations of the propertyless could be further stratified based on the types of labor or services they have to offer as well as their level of skills, education, expertise, or credentials. He divided the propertyless into two classes: the working class, made up of unskilled, semi-skilled, and skilled manual workers and the middle class, made up of white collar workers, public officials, managers, and professionals (Kendall, 2009). All
things being equal in the market, those who offer more highly sought after labor or services and have better skills, education, expertise or credentials command higher wages or salaries and thus have better life chances (Kerbo, 2006). Consequently, Weber (1963) argued that class situation is ultimately market situation. His conceptualization of class, based on market situation, emphasizes economic inequality and is closely linked to what is considered SES today (Kerbo, 2006; Levine, 2006).

**Status.** The second dimension of social stratification, status, is determined by the social honor or prestige accorded to different social groups within a community (Weber, 1963). Members of a status group share a common “status situation,” defined by Weber (1963) as "every typical component of the life fate of men that is determined by a specific, positive or negative, social estimation of honor” (p. 49). Unlike classes, status groups are by definition groups or communities because their member share a sense of belonging based on a specific standard of evaluation of status honor or prestige accepted by the group (Grabb, 1990; Hughes et al., 2003). Based on this standard, members of status groups regard themselves or may be regarded by others as superior, equal, or inferior to those in other status groups (Hughes et al., 2003). In contrast to classes, which are “stratified according to their relations to the production and acquisition of goods” … status groups … “are stratified according to the principles of their consumption of goods as represented by special ‘styles of life” (Weber, 1963, p. 56). Hence, an individual’s status situation also shapes his or her “life fate” or chances.

The status honor of a particular status group depends on maintaining its exclusiveness and distance from other groups (Hurst, 2004). Hence, status groups seek to improve their social position at the expense of others through social closure, the process whereby they restrict access
to certain resources, rewards, and privileges to those who share similar lifestyles and other socially prescribed characteristics (Kerbo, 2006; Levine, 2006; Weber, 1963). They exclude outsiders by restricting intimate social intercourse (e.g., gatherings, social events, activities, marriages) to members of their circle and by monopolizing ideal and material goods and economic opportunities that confer prestige and honor (Hurst, 2004; Kerbo, 2006; Weber, 1963).

The socially prescribed characteristics of status groups can be achieved ones, such as marital status, occupation, or education, or ascribed ones such as, age, race, ethnicity, gender, religious affiliation, sexual orientation, or family lineage.

Weber (1963) viewed classes and status groups as distinct concepts and pointed out that status honor or esteem are accorded to individuals independently of their economic position (Weber, 1963). Hence, individuals occupying different class positions such as rich or poor aristocrats may enjoy the same level of social honor or esteem and thus belong to the same status group (Hughes et al., 2003; Weber, 1963). Conversely, individuals of comparable wealth may belong to the same class but to different status groups such as those with longstanding wealth (“old money”), who enjoy higher prestige than the “nouveau riche” who have recently acquired their wealth (Hughes et al., 2003). However, Weber (1963) recognized that class and status often intersect because the maintenance of a particular lifestyle is often dependent on a certain level of economic resources. Those who possess both wealth and social honor have more power than those who merely possess social honor (Lynch & Kaplan, 2000). Class and status also overlap when an economic class “also takes on the subjective awareness and cohesion of a ‘status group,’ thus becoming a ‘social class’” (Grabb, 1990, p. 59).
**Party.** The third and least developed dimension in Weber’s conceptualization of the distribution of power, party, refers to any voluntary group organized to pursue collective interests and acquire power (i.e., influence communal action) to achieve ideal or material advantages for its members (Hurst, 2004; Weber, 1963). By party, Weber not only meant formal political parties but also other organized groups such as labor unions, professional associations, and special interest groups (Hughes et al., 2003). He noted that parties have a rational structure, formal organization, and an administrative staff and employ various strategies and tactics to influence communal action (Weber, 1963). Like status groups and social classes, parties are groups or communities because their members share a sense of group consciousness and solidarity based on common interests and the party’s purpose (Grabb, 1990; Hughes et al., 2003; Weber, 1963).

Parties may represent the interests of particular social classes or status groups, but they are not always purely based on class or status (Weber, 1963). Hence, parties may recruit members from the social classes and/or status groups whose interests they represent or reach across class and status divides to enlist a more heterogeneous following (Hughes et al., 2003).

While distinct, classes, status groups, and parties are interrelated and may at times overlap. For example, as noted by Wright (2002), members of “a class become a status group when they become conscious of sharing a common identity with other members of their class, and they become a party when they organize on the basis of that identity” (p. 835).

**Measures of socioeconomic status.** The Weberian concepts of class and status are generally reflected in the measures used in research on the relationship between SES and health, but the concept of party (i.e., political power) is not. According to Lynch and Kaplan (2000) the use of measures of SES such as education, income, and wealth is based on the underlying
assumption that it is the mechanisms linked to aspects of distribution that are most important for health - the skills, knowledge, and resources held by individuals that form the key linkage between social stratification and the health of those individuals (p. 17). These measures reflect the resources that individuals have and consequently their life chances. Education represents credentials, knowledge, and skills, and it is a strong determinant of employment and income, while income and wealth represent material resources (Galobardes et al., 2006; Lynch & Kaplan, 2000). Education and occupation can also represent aspects of social status or prestige, and wealth can represent aspects of power and influence (Braveman et al., 2005; Galobardes et al., 2006). In addition to the SES measures, other measures used in health inequalities research such as age, race, ethnicity, and gender have foundations in Weber’s theory of social stratification and are indicators of individuals’ ascribed social status.

SES is measured by a number of different yet interrelated social and economic indicators such as income, wealth, education, occupation, or a combination of these factors (House & Williams, 2000; Oakes & Rossi, 2003; Williams, 1990). In the United States, education and income are the most frequently used measures of SES (Braveman et al., 2005). Education and income are also the variables with the strongest explanatory power in predicting health in the United States, while wealth provides somewhat weaker power, and occupation offers the least power (House & Williams, 2000).

Education and income are interrelated, but they reflect different dimensions of resources and other individual and societal factors, while having common and distinct pathways that link them to health (Gallo & Matthews, 2003; House & Williams, 2000; National Research Council,

**Education.** As a measure of SES education is rooted in Weber’s status dimension of social stratification (Galobardes et al., 2006). Education captures knowledge- and resource-related aspects of SES and their impact on health (Galobardes et al., 2006). For example, education can affect health directly by providing individuals with knowledge, skills, and enhanced cognitive functioning, enabling them to process health promotion, information, and education messages; to access appropriate health services and resources; and to communicate effectively with health providers (Adler & Newman, 2002; Galobardes et al., 2006; National Research Council, 2004). Education also affects health indirectly by shaping current and future occupational and employment opportunities, as well as earning power (Adler & Newman, 2002; Galobardes et al., 2006). Thus, education can capture the effects of an adult’s resources on his or her health. Education can also capture the long-term effects of early life circumstances on adult health as the material, intellectual, and other resources of a child’s family shape his or her educational attainment, and consequently, future employment and income opportunities (Galobardes et al., 2006). Moreover, poor health during childhood could negatively affect school attendance and educational performance/attainment, which in turn could adversely affect adult health (Galobardes et al., 2006). Educational attainment is also an indicator of achieved social status and can affect health by enhancing an individual’s self-esteem (Galobardes et al., 2006; Krieger et al., 1997).

**Income.** Income is the indicator of SES that most directly reflects Weber’s conceptualization of class. The income that individuals can earn, based on their market situation,
affects their health directly by providing them with access to health enhancing goods and services (i.e., quality housing, healthier food and nutrition, health services, and exercise and recreational facilities) (Galobardes et al., 2006; Winkleby et al., 1992). Those with higher income have greater buying power to access such health enhancing good and services. Indirectly, higher income can positively affect individuals’ health through the enhanced self-esteem they may derive from having access to material goods that are relevant to participation in society such as fashionable clothes, automobiles, and electronic devices (e.g., cell phones, computers) (Galobardes et al., 2006). From a life course perspective, health can be adversely affected by material deprivations experienced in-utero, post-partum, and during childhood, which, in turn, can have cumulative effects on adult health status (Galobardes et al., 2006). Higher income can also indirectly affect health by providing access to better quality education (Adler & Newman, 2002).

**Relationship of education and income.** Education and income, while correlated, capture different dynamics and consequently have different implications for health and the measurement of health inequalities. For example, education more strongly affects health behaviors such as smoking (Roberts & House, 2000). Moreover, the health enhancing resources afforded by education or income may be unequally distributed based on race/ethnicity or gender. For instance, income can vary for persons at similar educational levels based on gender and race/ethnicity (i.e., men tend to earn more than women; Whites tend to earn more than Blacks and Hispanics) (Braveman et al., 2005). While comparable in terms of income-level, poor African Americans and Latinos are more likely to live in impoverished neighborhoods than poor Whites (Krieger et al., 1997). Moreover, the goods and services available to Whites tend to be of
higher quality and lower price than those available to African Americans (Krieger et al., 1997). Compared to Whites, African Americans also tend to pay higher prices for goods such as food, new cars, and home mortgages as well as higher taxes on homes of comparable worth (Krieger et al., 1997). These variations reflect the complexity of SES-related health disparities by race and gender and suggest that single measures of SES are insufficient to assess how it shapes health disparities (Braveman et al., 2005; Krieger et al., 1997).

Compared to income, education has been more widely used as a basic measure of SES in U.S. studies for a number of reasons: 1) data on this measure is more easily obtainable; 2) it is applicable to individuals not in the paid labor force; 3) it is less susceptible to social drift; 4) it is a more stable measure, and 5) it is associated with numerous health outcomes (Elo & Preston, 1996; Gallo & Matthews, 2003; Krieger et al., 1997; National Research Council, 2004). Generally, information on educational attainment can be obtained for all individuals, the information provided tends to be more accurate, and individuals are more inclined to provide it than to provide information about their income (Elo & Preston, 1996; Gallo & Matthews, 2003; Krieger et al. 1997). In contrast, individuals are more hesitant to provide information about their income, and non-response rates for questions on income are often high in health surveys (Krieger et al., 1997; National Research Council, 2004).

Educational attainment is generally established by early adulthood and does not change dramatically over the life course (Gallo & Matthews, 2003; Krieger et al., 1997). In contrast, income is dynamic and individuals may experience fluctuations within the same year or over the course of many years (Krieger et al., 1997). Education is less susceptible to social drift as individuals are more likely to complete their education before the onset of chronic illness or
functional impairments in adulthood (Elo & Preston, 1996; Gallo & Matthews, 2003). In contrast, income is more susceptible to social drift as the onset of chronic illness or functional impairments may affect individuals’ occupational status and consequently their earning power (Elo & Preston, 1996; Gallo & Matthews, 2003).

*Evidence: Socioeconomic status and health.* Strong evidence in the public health and social science literature has documented a robust association between SES and health status dating back to the earliest records (Williams & Collins, 1995). Research studies verifying this relationship indicate that those of lower SES tend to experience substantially higher morbidity, mortality, and disability rates; poorer survival rates; and lower life expectancy than those of higher SES (Antonovsky, 1967; Feinstein, 1993; Haan, Kaplan, & Camacho, 1987; Kaplan & Keil, 1993; Kitagawa & Hauser, 1973; Marmot, Rose, Shipley, & Hamilton, 1978; Pappas, Queen, Hadden, & Fisher, 1993; Rogot., Sorlie, & Johnson, 1992; Syme & Berkman, 1976; Williams, 1990; Williams & Collins, 1995). The literature has documented the relationship between SES and health across time periods, places, demographic groups, throughout the life-span and from birth to old age for a broad range of indicators of health and disease, using various measures of SES including income, education, employment, occupation, and wealth (Adler et al., 1994; Adler & Ostrove, 1999; Antonovsky, 1967; Feinstein, 1993; Haan, Kaplan, & Syme, 1989; Syme & Berkman, 1976). This association is found in both developing and developed countries throughout the world (Elo, 2009). Even though the gap in disparities in health by SES has narrowed over time, the association persists whether SES is measured by education, occupation, income, or wealth, (Kitagawa & Hauser, 1973; Pappas et al., 1993; Williams, 1990; Elo, 2009).
The evidence also indicates that whether measured by education, income, employment, occupational level or wealth, SES is associated with health such that those at each higher step in the hierarchy experience better health than those just below them (Adler & Ostrove, 1999; House & Williams, 2000; Marmot, 1999; Marmot, 2002; Williams, 2005; Williams & Collins, 1995). This “gradient” holds from the poorest to the richest with the magnitude being greater at lower levels of SES (Adler et al., 1994; Backlund, Sorlie, & Johnson, 1996; Braveman, Cubbin, Egerter, & Williams, 2010; Haan et al., 1989; House & Williams, 2000; Isaacs & Schroeder, 2004; Lin, Rogot, Johnson, Sorlie, & Arias, 2003; McDonough, Duncan, Williams, & House, 1997; Mechanic, 2002; Rogot et al., 1992; Sorlie, Backlund, & Keller, 1995). There is also evidence that, while monotonic, the SES-health gradient is not strictly linear as there are significant diminishing returns to health at higher levels of SES (Backlund et al., 1996; House & Williams, 2000; McDonough et al., 1997). Studies have also documented that the SES-health gradient varies by age, gender, and race/ethnicity (Backlund et al., 1996; Lin et al., 2003; Braveman et al., 2010; McDonough et al., 1997; Rogot et al., 1992). Moreover, studies have shown that over time, the graded relationship between SES and health has persisted, and the health gaps between lower and higher SES groups have actually widened (Hadden & Rockswold, 2008; Meara, Richards, & Cutler, 2008; Pappas et al., 1993).

The literature also provides substantial evidence of gender differences in the graded relationship between SES and mortality, indicating that the gradient is steeper for men than for women (Feldman, Makuc, Kleinman, & Cornoni-Huntley, 1989; Lin et al., 2003; Mackenbach et al., 1999; MacIntyre & Hunt, 1997; Muennig, Kuebler, Kim, Todorovic, & Rosen, 2013; Pappas et al., 1993; Rogot et al., 1992). However, further investigations have shown that the steeper
SES-mortality gradient shown for men than women is influenced by whether the person’s own or spousal income is measured, whether absolute or relative measures of inequality are used as well as gender differences in causes of death and gender differences in explanatory variables mediating the relationship (Mackenbach et al., 1999; McDonough, Williams, House, & Duncan, 1999; Muennig et al., 2013; Mustard & Etches, 2003).

Evidence: Socioeconomic status and HIV/AIDS. Although less extensive than the literature on the association of SES with other health indicators, there is a growing body of evidence documenting the association of SES with HIV/AIDS morbidity and mortality. The pattern of the association between SES and HIV/AIDS in the United States generally reflects an inverse relationship, indicating that the most disadvantaged groups experience the greatest morbidity. A number of studies examining the association of AIDS incidence or prevalence with SES at different levels of analysis, using different measures of SES, document an inverse relationship (Fife & Mode, 1992a; Fife & Mode, 1992b; Denning et al., 2011; Karon et al., 2001; Simon, Hu, Diaz, & Kerndt, 1995; Murrain & Barker, 1997; Zierler et al., 2000).

However, findings from studies of the association of SES with HIV/AIDS survival after diagnosis with HIV infection and with mortality have been mixed, depending on whether the study was undertaken before or after the introduction of HAART. Some studies examining these relationships before the introduction of HAART have shown no association between SES and survival or mortality (Chaisson, Keruly, & Moore, 1995; Katz, Hsu, Lingo, Woelffer, & Schwarcz, 1998). In contrast, studies examining the association of SES (whether measured at the individual, neighborhood, or county level) with AIDS survival or mortality, after the introduction of HAART, have consistently shown a strong direct relationship for survival and a
strong inverse relationship for mortality (Cunningham et al., 2005; McDavid Harrison et al., 2008; McFarland et al., 2003; McMahon et al., 2011; Rubin et al., 2009). The results of some of these studies suggest that the association between low SES and reduced survival or increased mortality may be explained by inequitable access to HAART (Cunningham et al., 2005; McFarland et al., 2003; Rubin et al., 2009).

A number of studies examining the relationship between SES and access to HAART have found that HIV-positive persons who have lower education are less likely to have access to adequate HIV medical care or to receive HAART (Andersen, et al., 2000; Cook, et al., 2002). Other studies have shown that insurance status is associated with receipt of HIV-medical care, HAART, and mortality among patients treated with HAART. For example, a study of a large representative probability sample of HIV-positive persons receiving regular medical care found that the uninsured or Medicaid-insured were more likely to receive suboptimal HIV medical care than were the privately-insured (Shapiro, et al., 1999). Cook et al., 2002 found that insurance status was not associated with use of antiretroviral therapy by women in the pre-HAART period, but in the post-HAART period, women with private health insurance were significantly more likely to use HAART than those without private coverage. A prospective study of HIV-positive persons found that mortality was higher for those treated with HAART who had publicly funded medical coverage than among those who had private medical coverage (Palella et al., 2011). Moreover, non-AIDS death and disease causes were higher among publicly insured decedents compared to privately insured decedents, suggesting that these often preventable co-morbidities contributed to the observed disparities in survival (Palella et al., 2011).
Evidence: Socioeconomic status, women, and HIV/AIDS. The evidence points to substantial socioeconomic disadvantage among women living with HIV and those at risk of infection in the United States. For example, a study using a large probability sample of HIV-positive adults receiving care found that women were more likely to be socioeconomically disadvantaged than men on measures of income, education, employment, and health insurance (Bozzette, et al., 1998). A longitudinal study of women living with HIV and those at risk of contracting HIV found substantial socioeconomic disadvantage among both groups on measures of education, employment, and poverty (Bacon, et al., 2005). However, there were also differences between the two groups of women. Although unemployment was high among both groups of women, the rates were higher for women living with HIV (Bacon et al., 2005). Conversely, women at risk for HIV were two times more likely to live in unstable housing and four times more likely to be uninsured than women living with HIV (Bacon et al., 2005). A case-control study among African American male and female adults with a recent diagnosis of heterosexually transmitted HIV infection in North Carolina found that those with less than a high school education were three times more likely to be HIV-positive in the overall sample and five times more likely to be HIV-positive in the low-risk sub-sample (Adimora, et al., 2006).

Evidence: Socioeconomic status and condom use among women. There is some evidence of the association of SES with condom use among women in the United States.

Education. In terms of education, numerous studies have found that education is positively associated with condom use among women (Albarracin & Plambeck, 2010; Bankole et al., 1999; Holmes et al., 2008; Moreno & El-Bassel, 2007; Reece et al., 2010; Saul et al., 2000). At the national level, one study found that better educated women were more likely to use
condoms than less educated women (Bankole et al., 1999). National and local level studies have also found that education is a significant predictor of condom use among women. For example, a national study found that women with a bachelor’s degree or higher were more likely than those with less education to use a condom during the past 10 episodes of vaginal intercourse (Reece et al., 2010). In a local study of inner-city African American women, Holmes et al. (2008) found that adjusting for relevant covariates associated independently with female condom, women with high school education were three more likely to use a female condom than those without high school education.

Education has also been associated with condom use among Latinas, but the direction of the association varies in some studies. For example, a study comparing Dominican and Puerto Rican women in an outpatient health care clinic in New York City found that women with more years of education were more likely to have always used condoms in the past 90 days (Moreno & El-Bassel, 2007). Moreover, in a causal model to determine the effects of power on heterosexual risk for HIV among Puerto Rican women, Saul et al. (2000), using education as a measure of resource power, found a direct effect on condom use with higher education associated with more condom use. In contrast, in a study using national data, Zambrana, Cornelius, Boykin, & Salas-Lopez (2000) found that for both Puerto Rican and Mexican American women, those who completed less than 13 years of education were more likely to have male partners who consistently used condoms than their counterparts with more education (Zambrana et al., 2004).

Other studies have found that lower educational status is associated with greater unprotected sexual intercourse (Dixon, Antoni, Peters, & Saul, 2001; Shih, et al., 2011). For example, in a study of Puerto Rican women in the Northeastern United States, Dixon et al.
(2001) found that greater unprotected sex (vaginal and anal) was associated with lower educational level. Similarly, a cohort study examining inconsistent and incorrect condom use among racially and ethnically diverse women found that women with some college education reported a 50% greater number of unprotected sex acts than did women with a college or graduate degree (Shih et al., 2011). One study found that the association of education with condom use varied by partner type among Latinas: being more educated predicted increased condom use with main partners but not with occasional partners (Albarracin & Plambeck, 2010).

**Poverty, income, public assistance, and employment status.** Other measures of SES such as poverty status, income, receipt of public assistance, and employment status have been found to be associated with condom use among women. While Bankole et al. (1999) found no association between poverty status and condom use in 1988, they found that in 1995 poor women were less likely to be using condoms than were higher income women. In contrast, Ickovics et al.’s (2002) study of predictors of heterosexual risk for HIV among African American, Latina, and White women found that as income increased, unprotected sex increased. Women with higher incomes were more likely to engage in unprotected intercourse and to be in committed relationships with lower risk partners (Ickovics et al., 2002). Zambrana et al. (2004) also found, that women in higher annual income categories (between $16,000 and $29,999 for Puerto Ricans, and $16,000 or more for Mexican-Americans) were less likely to use condoms than those in the lowest income category (below $16,000 per year). Contrary to their finding of a positive association between condom use and education among Latinas, Albarracin and Plambeck (2010) found that those with lower income were more likely to use condoms in the previous month with their main partners but not with their occasional partners.
Using receipt of public assistance as a measure of low SES, Wingood and DiClemente (1998a) found that African American women whose sexual partners were non-condom users were three times more likely to receive public assistance (Aid to Families with Dependent Children) (Wingood & DiClemente, 1998a). A study of Puerto Rican women in the northeastern United States, found that current employment mediated the relationship between increased feelings of depression and anxiety and decreased condom use during vaginal sex, after controlling for educational level, residing with the husband or boyfriend, and children living with the participant (Dixon et al., 2001). Moreover, current employment accounted for a significant proportion of the unique variance in condom use during vaginal sex (Dixon et al., 2001).

**Explanations: Relationship between SES and health.** A body of research has developed over time to identify the pathways and mechanisms by which SES affects health (Adler & Rehkopf, 2008).

**Spurious.** Some explanations posit that the relationship between SES and health is spurious due to the association of both SES and health to underlying genetically based factors or to measurement errors arising from inconsistencies in the way SES is assigned in death certificates or health reports (numerator) and in census data (denominator) (Adler et al., 1994; Macintyre, 1997; Siegrist & Marmot, 2006; Smith, Bartley, & Blane, 1990). However, Adler et al. (1994) point out that the genetically determined explanation for both poorer health status and lower SES has not been supported by existing evidence. Moreover, while the measurement error explanation may be plausible for studies using official data with numerator/denominator, it is not applicable to longitudinal observational studies using individual data (Siegrist & Marmot, 2006).
Social drift. The social drift, or selection explanation, argues that chronic illnesses or functional impairments prevent some individuals from getting or keeping jobs and earning adequate income, thereby causing a downward drift in their SES (Adler & Ostrove, 1999; Siegrist & Marmot, 2006; Williams, 1990). Williams (1990) points out that although early studies provided some evidence to support the social drift/selection hypothesis, they were beset with methodological issues (Williams, 1990). Later studies provided some evidence that health-related downward SES mobility did occur, but there was stronger evidence supporting the social causation hypothesis (Adler & Ostrove, 1999; Williams, 1990). For example, longitudinal studies, especially those using birth cohorts have shown that poor health during childhood affects social mobility later in life, but the effects are small, and it is more likely that SES affects health (Siegrist & Marmot, 2006).

Social causation. Various social causation explanations, which posit that SES influences health status, have evolved over time (Adler & Ostrove, 1999). Early explanations of the graded relationship between SES and health fell into two camps with some researchers stressing the importance of material resources and others emphasizing psychosocial factors (Adler & Stewart, 2010).

Materialist/structuralist. The materialist or structuralist explanation posits that the material resources related to income and occupation (which are both influenced by education), affect health indirectly by differentially exposing individuals to conditions of life that have a more direct effect on morbidity and mortality (Adler & Newman, 2002; Adler & Rehkopf, 2008; Siegrist & Marmot, 2006; Williams, 1990). Morbidity and mortality is higher among lower SES individuals because they are more likely to be exposed to health damaging factors in their
physical environments such as inadequate nutrition, poor housing, residential crowding and noise, pollution, toxins and carcinogens, and unsafe working conditions, as well as in their social environments such as inadequate health care, isolation and lack of social connections or support, and high risk social and sexual networks (Adler & Newman, 2002; Adler & Rehkopf, 2008; Williams, 1990).

Rooted in the materialist/structuralist account, Link and Phelan’s (1995) fundamental causes hypothesis argues that SES and other social factors such as race/ethnicity and gender are fundamental causes of health inequalities because they represent “access to resources that can be used to avoid risks or minimize the consequences of disease once it occurs” (p. 87). They define resources broadly as “money, knowledge, power, prestige, and the kinds of interpersonal resources embodied in the concepts of social support and social network” (Link and Phelan, 1995 p. 87). These resources are flexible in that they are transportable from one situation to another and can be used in different ways, in different situations, even as diseases and their associated risk factors, mechanisms, and outcomes change over time (Link & Phelan, 1995).

SES is a fundamental cause of disease because individuals of lower SES have less economic and social resources at their disposal to avoid risks, diseases, and their consequences than those of higher SES, even when there are changes in prevalent diseases and their associated risk factors or advances in health knowledge, technology, and treatment of diseases (Link & Phelan, 1995).

Psychosocial. Psychosocial explanations argue that psychological and social factors mediate and therefore explain the association of SES with health (Adler et al., 1994). SES influences the physical and social environments which in turn shape social and psychological factors that affect health (Adler & Snibbe, 2003). Social factors such as social isolation and lack
of engagement in social networks, exposure to high risk drug and sexual networks, social exclusion, discrimination, and violence have been identified as contributing to poorer health outcomes (Adler et al., 1994; Adler & Rehkopf, 2008; Gallo & Matthews, 2003; Williams, 1990). Psychological factors identified as contributing to poor health outcomes include depression, anger and anxiety, cognitions such as hopelessness, hostility, and lack of mastery and control, as well as psychological stress (e.g., exposure to life events that require adaptation, or to demands that exceed one’s abilities to cope) (Adler et al., 1994; Adler & Rehkopf, 2008; Gallo & Matthews, 2003; Williams, 1990).

*Life-style/behavioral.* The life-style/behavioral explanation posits that SES affects health indirectly by shaping cultural influences that contribute to health-damaging or health promoting-behaviors (Siegrist & Marmot, 2006). According to this account, the relationship between SES and health is explained by the higher prevalence among those of lower SES of health behaviors known to be strong determinants of major chronic diseases such as poor diet and nutrition, smoking, consumption of alcohol or illicit drugs, lack of physical exercise and overweight (Siegrist & Marmot, 2006). However, Siegrist and Marmot (2006) point out that this argument does not explain why people of lower SES exhibit these behaviors more often than their higher SES counterparts. Singh-Manoux and Marmot (2005) applied Bourdieu’s concept of “habitus”\(^1\)

\(^1\) Habitus refers to an individual’s durable dispositions to think, feel, and act in certain ways based on his or her life experiences. Habitus is shaped by an individual’s SES and in turn shapes his or her lifestyle and behavior. The tendency of individuals to prefer the lifestyle within which they were socialized leads to the reproduction of that lifestyle (Singh-Manoux & Marmot, 2005).
to posit that through the process of socialization, individuals develop health-related lifestyles, attitudes, beliefs, and behaviors, as well as the cognitive, motivational, and interpersonal skills needed for personal development and coping with adverse life conditions or events. Conditioned on SES, these lifestyles, attitudes, beliefs, and behaviors are then transmitted from one generation to the next (Siegrist & Marmot, 2006; Singh-Manoux & Marmot, 2005).

**Stress.** Stress is another mechanism through which SES is posited to influence health. This explanation contends that individuals living in disadvantaged environments are exposed to more uncertainty, conflict, and threats and often have inadequate resources to respond effectively to demands in different spheres of life (Adler & Rehkopf, 2008; Adler & Snibbe, 2003). Lower SES individuals also have greater psychological reactions to stress, at any given level of stress, than those of higher SES (Adler & Snibbe, 2003). The combined effect of more stress and greater psychological reactions to it reduces the capacity of lower SES individuals to cope with environmental stressors, making them more vulnerable to disease (Adler & Snibbe, 2003).

**Allostatic load.** The stress explanation has been expanded with the concept of allostatic load which offers a multi-systemic physiological account of the relationship between SES and health (Juster, McEwen, & Lupien, 2010; Seeman, Epel, Gruenewald, Karlamangla, & McEwen, 2010). Allostatis refers to short-term fluctuations in the body’s physiologic (cardiovascular, endocrine, metabolic, nervous, and immune) systems to adapt to the demands of the physical or psychosocial environment (i.e., stress) (Juster et al., 2010; Seeman et al., 2010).

Allostatic load is the cumulative wear and tear experienced by the body as a result of the activation of repeated allostatic responses during stressful circumstances as well as the inefficient turning-on or shutting off of these responses (Juster et al., 2010; Seeman et al., 2010). Exposure
to chronic stress leads to the overburdening and dysregulation of the body’s physiologic systems, thus damaging health and causing a range of diseases (Adler & Snibbe, 2003). Studies show that lower SES is associated with faster accumulation and higher levels of allostatic load across the life course (Seeman et al., 2010).

**Life course.** Life-course explanations argue that socioeconomic factors operating at different stages of life and across generations contribute to the development of inequalities in adult health (Siegrist & Marmot, 2006). Moreover, risk factors accumulate and interact synergistically over the life course in complex ways to affect adult health (Siegrist & Marmot, 2006). For example, exposure to poor socioeconomic conditions is associated with poor growth in utero and post-natally (low birth weight, shorter leg length, and height), but also with accelerated post-natal growth, especially weight gain (Power & Kuh, 2006). Moreover, poor socioeconomic conditions in early life, and later, influence adult risk factors for coronary heart disease including abdominal obesity, dietary fat, binge-drinking, diabetes and insulin resistance syndrome, smoking, hypertension, cholesterol, obesity and physical inactivity (Power & Kuh, 2006). **Race and ethnicity.** Race and ethnicity are important dimensions of social stratification that shape health disparities in the United States (Williams & Collins, 1995). Race and ethnicity represent the status dimension in Weber’s (1963) formulation of the distribution of power, and as such, they are important factors determining an individual’s position within the social hierarchy. Race, like gender, is an ascribed status in that it is beyond an individual’s or group’s control, neither chosen nor earned it is imposed from without and usually assigned at birth or assumed involuntarily later on (Kerbo, 2006). Some scholars also view ethnicity as an ascribed status, while others view it as a voluntaristic self-identity, and still others view it as both ascribed and
Contested identity claims arise when the ethnic identities ascribed by others to an individual or group contradict their own self-defined ethnic identities (Ahmad & Bradby, 2008).

Race and ethnicity are ubiquitous concepts that are commonly used as variables in biomedical, epidemiologic, health disparities, and broader public health research in the United States (Ahmad & Bradby, 2008; Braun, 2002; Dressler, Oths, & Gravlee, 2005; Hunt & Megyesi, 2008; Lee, 2009; Lin & Kelsey, 2000; Loue, 2006). Unlike many European countries where public health data have been routinely collected by social class, in the United States public health statistics historically have been collected and reported by race and/or ethnicity (Braveman et al., 2010; Mays, Ponce, Washington, & Cochran, 2003; Williams & Collins, 1995). Racial and ethnic variations in health status and outcomes may be the result of a variety of factors including differences in biology, behavior, and/or exposure to physical and social environmental factors (Mays et al. 2003). Such variations have been associated with biological or social determinants and their interactions (Mays et al. 2003).

While distinct concepts, race and ethnicity overlap and are often used interchangeably in the literature, especially in the United States where the hybrid term “race/ethnicity” is commonly used (Bhopal, 2004). Race and ethnicity are rarely defined in health research studies, and when they are, the definitions tend to be vague and the categories used to operationalize them tend to be inconsistent or imprecise (Hunt & Megyesi, 2008; Lee, 2009; Williams & Collins, 1995). Moreover, individuals are frequently assigned to racial or ethnic categories arbitrarily (McKenzie & Crowcroft, 1994).
Race. There is no consensus on the definition of race. Some definitions view race as biologically/genetically determined and others view it as socially constructed. Most biological definitions of race indicate that races represent sub-species of *Homo sapiens* that are distinguished from one another by geographical origin, ecological region, and phenotypic and genetic characteristics ("Race," 2006; "Race," 2008). Definitions of race that affirm it is socially constructed focus on its social, political, ideological, and historical origins and to categorization of individuals and human groups according to phenotypic differences (i.e., skin color, facial and anatomical features) rather than valid biological/genetic differences ("Race," 2008; "Race," 2009; Smedley, 2006). Cornell and Hartmann (2007) provide a succinct definition of race which characterizes it as a socially constructed concept: “a human group defined by itself or others as distinct by virtue of perceived common physical characteristics that are held to be inherent. A race is a group of human beings socially defined on the basis of physical characteristics” (p. 25).

Ethnic group. Most definitions of ethnic group share common elements, generally referring to the social group a person identifies with or is identified with by others based on a collective sense of a common history and geographic origin, ancestry, distinctive way of life, cultural traditions, language, diet, religion, and physical characteristics ("Ethnic Group," 2006; "Ethnic Group," 2008). Schermerhorn (1978) defines an ethnic group as “A collectivity within a larger society having real or putative common ancestry, memories of a shared historical past, and a cultural focus on one or more symbolic elements defined as the epitome of their peoplehood” (Schermerhorn, 1978, p. 12). Some elements in the definitions of an ethnic group overlap with those in the definitions of a race such as common ancestry or geographic origin, blood ties, and physical features.
Biological versus social constructions of race. There is much controversy associated with the concepts of race and ethnicity and their use in research has been hotly debated in public health as well as in the biomedical, social, and behavioral sciences (Bhopal, 2004; Krieger, 2005).

Biological perspective. A body of research in health disparities is underpinned by the view that race is a potentially meaningful biological concept and a marker for genetic variations between human populations (Lee, 2009; Lillie-Blanton & LaVeist, 1996; Williams & Collins, 1995). This perspective is based on the premise that human beings can be divided into subspecies (races) which are distinguished from each other by biological/genetic homogeneity (Bhopal, 2004; Cooper & David, 1986; Williams, Lavizzo-Mourey, & Warren, 1994). Accordingly, racial differences in health are viewed as mainly determined by innate genetic differences between groups (Cooper & David, 1986; Krieger, 2001; Williams et al., 1994).

Social constructivist perspective. In contrast, the social constructivist perspective views race as a socially constructed concept which varies over time and across societies (LaVeist, 1994; Lee, 2009; Lillie-Blanton & LaVeist, 1996; Williams & Collins, 1995). Rejecting the biological and genetic bases of race, proponents of this perspective view race as a proxy for social, economic, political, cultural, as well as specific historical conditions, processes, and experiences that determine exposures to disease causing factors, and that shape health behaviors and outcomes (Lee, 2009; Williams & Collins, 1995). Although proponents of the social constructivist perspective recognize that there is genetic variation among human beings, they argue that these genetic variations do not overlap with current concepts of race nor with the racial categories employed in places like the United States (Graves, 2010; Lee, 2009).
Support for the social constructivist conception of race coalesced in 1950, with the release of *The Race Question*, the first of four statements on race issued by the United Nations Educational, Scientific, and Cultural Organization (UNESCO) (Brattain, 2007; Sundquist, 2008). Based on a review of extant biological and anthropological evidence regarding race, the authors declared that “The biological fact of race and the myth of ‘race’ should be distinguished. For all practical social purposes ‘race’ is not so much a biological phenomenon as a social myth” (UNESCO, 1950, p. 8). A large body of biological/genetic, anthropological, psychological, and sociological research conducted in the latter half of the 20th century has led to a broad consensus among most scientists that race as a biological concept has no scientific validity (American Anthropological Association, 1998). According to the American Anthropological Association (1998), the evidence indicates “that human populations are not unambiguous, clearly demarcated, biologically distinct groups” (p. 712).

By the last quarter of the 20th century, a near consensus emerged in the scientific community “that racial categories were too poorly defined, too historically tainted, and too tied up with all manner of social prejudice to play much of any positive role in etiologic biomedical research” (Kaufman & Cooper, 2008, p. 119). However, recent advances in molecular techniques for quantifying human biologic variation and the completion of the sequencing of the human genome in 2003 have led to a resurgence of research regarding the distribution of genetic variations among diverse groups in order to understand and explain disparities in disease susceptibility and incidence as well as treatment response among racial and ethnic groups (Frank, 2007; Hunt & Megyesi, 2008; Lee, Mountain, & Koenig., 2001; Kaufman & Cooper, 2008). According to Lee et al. (2001) “the advent of genomic medicine has coincided with a
resurrection of a genetic epistemology of difference among human groups that is predicated on
the existence of ‘race’ through which populations are conceptualized as having inherent,
immutable biological differences” (p. 36). As a result, the long standing controversy over the
validity of the use of racial and ethnic categories in biomedical and genetic research has re-
emerged (Hunt & Megyesi, 2008; Lee et al., 2001).

Federal racial and ethnic categories. Since 2001, the National Institutes of Health
(NIH) has required that the research studies it funds categorize participants into the five racial
and ethnic categories mandated by the federal Office of Management and Budget (OMB, 1997).
According to the OMB (1997), these racial and ethnic categories “represent a social-political
construct designed for collecting data on race and ethnicity of broad population groups in this
country, and are not anthropologically or scientifically based” (Supplementary information, para.
1). As Braun, et al. (2007) point out, although there is nothing “natural” about these categories
and the granting agencies’ regulations fail to clarify the “extent to which racial and ethnic
categories are intended to capture biological, cultural, or social dimensions of human diversity,”
researchers have been using the OMB and ill-defined U.S. census categories to analyze human
differences in health and disease for the past several decades (p. 1424).

Evidence: Race/ethnicity and health. In addition to the evidence demonstrating the
strong association between SES and health, the literature also documents significant disparities
in health by race and ethnicity, including persistent Black-White disparities dating back to the
day of the 19th century (Adler & Rehkopf, 2008; Bleich, Jarlenski, Bell, & LaVeist, 2012;
Dressler et al., 2005; Nickens, 1995; Williams, 1990; Williams & Collins, 1995; Williams &
Sternthal, 2010). For most of the 20th century, health disparities research has focused on
examining racial disparities between Whites and non-Whites, mostly African Americans (Dressler et al., 2005; Nickens, 1995; Williams & Collins, 1995). However, by the late 1970s, as the country became more diverse and multi-ethnic, greater emphasis has been placed on collecting and examining data on the health differentials experienced by other racial and ethnic minority populations (Dressler et al., 2005; Nickens, 1995; Williams & Collins, 1995).

Racial and ethnic health disparities differ greatly within and across different groups on a number of different indicators as well as specific diseases and health conditions (Bleich et al., 2012; Dressler et al., 2005; Gold et al., 2006; Nickens, 1995; Williams & Collins, 1995; Williams, Mohammed, Leavell, & Collins, 2010; Williams & Sternthal, 2010). In general, African Americans experience considerable and persisting health disadvantages compared to Whites and other racial/ethnic minorities, suffering greater morbidity, mortality and disability earlier in life of varying magnitude across a number of diseases and health conditions (Bleich et al., 2012; Dressler, 1993; Dressler et al., 2005; House & Williams, 2000; Mays, Cochran, & Barnes, 2007; Nickens, 1995; Oliver & Muntaner, 2005; Williams & Collins, 1995; Williams et al., 2010).

Mortality rates, a commonly used indicator of health status, illustrate significant variations among and within different racial and ethnic groups (Adler & Rehkopf, 2008; Barr, 2008; Nickens, 1995; Williams & Collins, 1995; Williams et al., 2010). For example, mortality rates are consistently higher for African Americans across most age groups when compared to Whites (Adler & Rehkopf, 2008; Nickens, 1995; Williams et al., 2010). The pattern for Native Americans shows fluctuations by age when compared to Whites with consistently higher mortality rates among the young (1-44 years), similar rates among the middle-aged (45-64
years), and lower rates among older persons (65-85 years and older) (Adler & Rehkopf, 2008; Nickens, 1995; Williams et al., 2010). Mortality rates for Latinos are about the same as those for Whites in the younger age groups (1-24 years) and consistently lower than the rates for Whites ages 25-years and older (Adler & Rehkopf, 2008; Nickens, 1995; Williams et al., 2010). In contrast, the pattern for Asian/Pacific Islanders reflects consistently and significantly lower mortality rates than those for Whites across all age groups (Adler & Rehkopf, 2008; Nickens, 1995; Williams et al., 2010).

Even though the health of the overall U.S. population has improved over time, disparities by race and ethnicity persist (Bleich et al., 2012; Hummer, 1996; Williams & Collins, 1995; Williams et al., 2010). For example, an analysis of time trends in age-adjusted all-cause mortality rates by sex and race/ethnicity from 1980 to 2007 showed declines in all sub-groups (Bleich et al., 2012). However, disparities persisted by race/ethnicity and gender (Bleich et al., 2012). All-cause mortality rates were highest among Black males and females and lowest among Hispanic females and males, followed by White females and males (Bleich et al., 2012). During this period, the Black-White gap in all-cause mortality increased for males but decreased for females (Bleich et al., 2012).

**Evidence: Race/ethnicity, SES, and health.** Racial/ethnic disparities have also been found in studies examining the relationship between SES and mortality. Kitagawa’s and Hauser’s (1973) 1960 Matched Records Study was the first U.S. study with a sample size large enough to allow analysis of SES disparities in mortality by race/ethnicity (Adler & Rehkopf, 2008; Feinstein, 1993). Their findings showed that in 1960 age-adjusted all-cause mortality rates in non-White adults, 25-years and older, were 34% higher for females and 20% higher for males
than comparable rates for Whites (Adler & Rehkopf, 2008). The study also showed that the extent of the differentials in age-adjusted mortality rates by education were greater for Whites than non-Whites (Adler & Rehkopf, 2008; Kitagawa & Hauser, 1973). Compared to the most educated, age-adjusted mortality rates were higher among the least educated by 64% for White men compared to 31% for non-White men and by 105% for White women compared to 70% non-White women (Adler & Rehkopf, 2008; Kitagawa & Hauser, 1973). Overall, the range of mortality differentials was greater among women than men (Feinstein, 1993; Kitagawa & Hauser, 1973). The findings for those over age 65 showed little relationship between education and mortality, except among White women, who had higher rates of mortality among the least educated as compared to the most educated (Feinstein, 1993; Kitagawa & Hauser, 1973; Syme & Berkman, 1976).

Pappas et al.’s (1993) study documenting that the inverse relationship between mortality and SES found in 1960 persisted and was even stronger in 1986, also showed racial differentials in mortality, especially for men. For example, in 1986 the age-adjusted death rate (per 1,000) among men with less than a high school education was 7.6 for Whites but 13.4 for Blacks (Pappas et al., 1993). For men with four years of college or more the age-adjusted death rate was 2.8 for Whites but 6.0 for Blacks (Pappas et al., 1993). For women with less than a high school education the age-adjusted mortality was 3.4 for Whites and slightly higher at 3.9 for Blacks (Pappas et al., 1993). The age-adjusted death rate among women with four years of college or more was 1.8 for White women but 2.2 for Black women (Pappas et al., 1993). Similar patterns in racial differentials were found by income (Pappas et al., 1993).
A recent study examining risk of mortality during the period from 1997 to 2004, showed that the Black-White differential in mortality narrowed but persisted over time and that socioeconomic variables (i.e., educational attainment, family income, and marital status) accounted for the majority of this gap (Hummer & Chinn, 2011). The risk of mortality was 36% higher for Blacks than for Whites, when controlling for age and sex, and this mortality differential was reduced to 11% when adjusting for educational attainment, family income, and marital status (Hummer & Chinn, 2011). In contrast, compared with Whites, the risk of mortality was 9% lower for Mexican-Americans and 5% lower for Mexican immigrants, when age and sex were controlled, but these differences were not statistically significant (Hummer & Chinn, 2011). However, statistically significant differences were found when adjusting for educational attainment, family income, and marital status, showing that compared to Whites the risk of mortality was 25% lower for Mexican-Americans and 29% lower for Mexican immigrants (Hummer & Chinn, 2011). The findings suggest these socioeconomic variables accounted for the lower risk of mortality among both Mexican origin groups (Hummer & Chinn, 2011).

To summarize, the literature on racial and ethnic disparities in health in the United States has documented persistent Black-White differentials disadvantaging Blacks since the end of the 19th century. Twentieth century studies primarily focused on Black-White health disparities until the 1970s, when the growing diversity of the U.S. population sparked interest in examining differentials among other racial and ethnic groups. The evidence indicates that racial and ethnic disparities in health vary greatly within and across different groups on a number of different indicators as well as specific diseases and health conditions. Generally, when compared to
Whites and other racial/ethnic minorities, African Americans experience poorer health on a range of indicators. However, there are differences by age in racial/ethnic mortality patterns. The literature also documents non-White-White differentials in the inverse association of SES with mortality with non-White males and females generally experiencing higher mortality than Whites (Kitagawa & Hauser, 1973). There is also evidence that the Black-White differential in mortality has persisted but narrowed over time and that socioeconomic variables account for this differential (Hummer & Chinn, 2011). Socioeconomic variables also account for the lower risk of mortality found among Mexican-Americans and Mexican immigrants when compared to Whites (Hummer & Chinn, 2011).

**Evidence: Race/ethnicity and HIV/AIDS among women.** Over the past decade, research in public health and the social sciences has provided evidence of the differential distribution of HIV and AIDS incidence, prevalence, and mortality by race and ethnicity (Denning et al., 2011; Durant et al., 2007; Espinoza et al., 2007; Karon et al., 2001; Lemly et al., 2009; Levine et al., 2007; Losina et al., 2009; McDavid, Li, & Lee, 2006; McQuillan & Kruszon-Moran, 2008; Morris et al., 2006; Prejean, Satcher, Durant, Hu, & Lee, 2006; Rubin et al., 2009). **Incidence and prevalence.** Compared with Whites, African Americans and Latinos have been disproportionately affected by HIV/AIDS in the United States since the mid-1980s with African Americans experiencing the most severe burden of HIV and AIDS in the United States (Sutton, et al., 2009). For example, a study of the incidence of HIV diagnoses in the United States showed that from 1999 through 2004 the number of HIV diagnoses reported annually among Black women was more than two times the number of those reported among White and Latina women combined (McDavid et al., 2006). While the rate of HIV diagnosis
decreased significantly from 2001 to 2004 among adolescent and adult women, in 2004 the rate for Blacks was 21 times, and the rate for Latinas was five times the rate for Whites (McDavid et al., 2006). Moreover, a study examining HIV prevalence rates during the period from 1999 to 2006 in a nationally representative sample of adults 18-49 years of age in the United States, found that the rate among Black women (1.49%) was nearly seven times higher than the overall prevalence rate for women (0.22%) and nearly 50 times higher than the rate for women in all other race/ethnicity groups (0.03%) (McQuillan & Kruszon-Moran, 2008).

Concurrent diagnoses and survival. Espinoza et al. (2007) analyzed the association of race/ethnicity with diagnoses of HIV infection and AIDS, concurrent diagnoses (diagnosis of AIDS made within the same month as the diagnosis of HIV infection), and survival after diagnosis of heterosexually acquired HIV/AIDS during 1999 to 2004. The researchers found that 64% of the cases of heterosexually acquired HIV/AIDS were among women and that 83% of those cases were among Black and Hispanic women (Espinoza et al., 2007). They also found that slightly more Whites (23%) and Hispanics (23%) than Blacks (20%) had concurrent diagnoses, probably due to higher HIV testing among Blacks (Espinoza et al., 2007). Concurrent diagnoses of HIV infection and AIDS implies that HIV was diagnosed late in the progression of the disease, probably due to delays in HIV testing until symptoms have developed (Espinoza et al., 2007). Despite their lower concurrent HIV and AIDS diagnoses, Blacks had lower survival at any time (12, 24, 36, or 48 months) after a diagnosis of AIDS than did Whites or Hispanics (Espinoza et al., 2007). Among women, the proportion surviving 48 months after a diagnosis of AIDS was lower for Blacks (76%) than for Whites (81%), and Hispanics (84%) (Espinoza et al.}
(2007). This finding suggests untimely treatment or lack of adherence to ART among Blacks (Espinoza et al., 2007).

**HAART use.** In a retrospective cohort study among persons with HIV infection in care between 1998 and 2005 in the United States, Lemly et al. (2009) found significant disparities in use of HAART and survival according to race and sex. They found that women and Blacks were less likely to receive HAART than were men and non-Blacks, respectively (Lemly et al., 2009). The crude all-cause mortality rate was higher for Blacks than non-Blacks, but similar for females and males (Lemly et al., 2009). After adjusting for age, injection drug use as a risk factor for HIV infection, previous diagnosis of AIDS, a variety of clinical risk factors, and previous HAART/ART use, the increased risk of mortality was associated with being Black and being female (Lemly et al., 2009). Being female continued to be associated with increased risk of death, but being Black did not after adjusting for HAART use while in care (Lemly et al., 2009). The findings suggest that use of HAART partially accounted for the race-associated but not for the sex-related differences in risk of mortality (Lemly et al., 2009).

**Life-years lost.** Racial and ethnic disparities have also been found in survival losses among people living with HIV. Losina et al. (2009) examined disparities in life-years lost as a result of risk behavior, late presentation, and early discontinuation of HIV care by race/ethnicity and sex. The researchers compared survival losses for persons with HIV infection with losses due to high-risk behavior, and HIV disease itself (Losina et al., 2009). The results indicated that HIV, when acquired at age 33.0 years and treated according to current U.S. guidelines, led to 11.92 years of life lost (Losina et al., 2009). An additional 3.30 years of life were lost due to late treatment initiation (2.60 years) and early discontinuation of ART (0.70 years) (Losina et al., 2009). Regardless of sex, Hispanics
(3.90 years) experienced the greatest number of additional life-years lost due to late initiation and early discontinuation of HIV (Losina et al., 2009). Their life-years lost were 21% higher than those for Whites and 30% higher than those for Blacks (Losina et al., 2009). Among women, lost years of life were 83% higher for Hispanics and 26% higher for Blacks than for Whites (Losina et al., 2009).

**Pre- and post-HAART mortality.** Examining national Black-White disparities in HIV disease mortality prior to and after the introduction of HAART by age and sex, Levine et al. (2007) found that in every age and sex group, but especially among women and the elderly, the disparity between pre- and post- HAART mortality from HIV was higher for Blacks than Whites. The greatest disparities in HIV mortality, particularly in the post-HAART period, were found among individuals aged 65 and older (Levine et al., 2007). Compared with White women of the same age, Black women in all age groups had no less than a 13-times greater risk of death from HIV (Levine et al., 2007). Moreover, the risk of death was 20 times greater among Black women aged 65- to 74-years than among their White counterparts (Levine et al., 2007). In contrast, Black men’s relative risk of death was more than 13 times higher than that of White men in only one age group (those aged 75- to 84-years) (Levine et al., 2007). The study showed that Black–White mortality risks increased in the period after HAART was introduced, that these disparities differed according to age and sex, and that the high disparities experienced by women in the period before HAART was introduced rose to extremely high levels in the period after HAART was introduced (Levine et al., 2007).
In summary, the literature documents differential distribution of HIV/AIDS incidence, prevalence, and mortality disadvantaging Black women to a greater extent than Hispanic or White women. However, there are variations by HIV/AIDS indicator, age, and sex. HIV and AIDS incidence and prevalence are generally significantly higher among Black women than Hispanic or White women (McDavid et al., 2006; McQuillan & Kruszon-Moran, 2008). While concurrent diagnosis of HIV and AIDS have been found to be slightly lower in Black women than White or Hispanic women, Black women experience shorter survival time after AIDS is diagnosed than do White or Hispanic women, probably due to late treatment initiation or lack of adherence to ART (Espinoza et al, 2007). However, there is also evidence showing that among persons with HIV, Hispanics, regardless of sex, experience significantly higher years of life lost due to late treatment initiation and premature discontinuation of ART than do Blacks or Whites (Losina et al., 2009). Differences in receipt of HAART and risk of death also vary by race and sex, disadvantaging Blacks and women. As one study showed Black women were less likely than men and non-Blacks to receive HAART, but after controlling for HAART use, being female continued to be associated with increased risk of death while being Black did not (Lemly et al., 2009). Black-White disparities in the risk of mortality have also been documented in the periods before and after the introduction of HAART, but among women, the risk of mortality in the post-HAART period was considerably higher for Blacks in all age groups and especially for older Blacks (ages 65-74) than for their White counterparts (Levine et al., 2007).

**Explanations: Relationship between race/ethnicity and health.** A number of models have been formulated to explain the association between race/ethnicity and health. As previously noted, the bio-genetic model has been shown to be flawed by scientific evidence showing that
current racial categories do not reflect biological differences (Adler & Rehkopf, 2008; Dressler et al, 2005; House & Williams, 2000; Hummer, 1996; Williams & Collins, 1995). Various social causation models have been developed to explain racial disparities in health (Adler & Rehkopf, 2008; Dressler et al., 2005; House & Williams, 2000; Hummer, 1996).

The socioeconomic model posits that racial/ethnic differences in health are confounded by SES disparities in health (Dressler et al., 2005; Hayward, Miles, Crimmins, & Yang, 2000; Hummer, 1996; Kawachi, Daniels, & Robinson, 2005; LaVeist, 2005; Williams & Collins, 1995). Hence, the disproportionate concentration of racial and ethnic minorities in lower socioeconomic strata explains racial/ethnic disparities in health (Dressler et al., 2005; Hayward et al., 2000; Hummer, 1996; Kawachi et al., 2005; Williams & Collins, 1995). Adjusting for SES leads to reductions in the magnitude of the effects of race/ethnicity on group differences in health, but it fails to completely eliminate those differences (Dressler et al., 2005). This has led some researchers to erroneously assume that some residual bio-genetic effect on health accounts for the remaining differences (Dressler et al., 2005). Another version of the socioeconomic model argues that the confounding of SES and racial disparities results from the higher prevalence of risky or health damaging behaviors among people of lower SES (Dressler et al., 2005). However, controlling for health behaviors has not completely eliminated racial/ethnic disparities in health (Dressler et al., 2005).

The lifestyle/behavioral model suggests that racial/ethnic disparities are related to group differences in lifestyle such as family formation, social support, and problem-solving and in health behaviors such as diet (e.g., high caloric intake, high salt intake, low potassium intake), exercise (e.g., low physical activity), tobacco use (e.g., smoking) and excessive alcohol or drug
use (Dressler et al., 2005; Hummer, 1996). While the evidence shows that lifestyle and health behaviors are strong contributors to disease risk, they alone or in combination cannot fully account for racial/ethnic health disparities (Dressler et al., 2005; Hummer, 1996). The psychosocial stress model, currently a dominant one in research on racial/ethnic health disparities, considers the stressors associated with interpersonal and institutional racism as a cause of these disparities (Dressler et al., 2005; Williams & Collins 1995).

Other models attribute racial/ethnic health disparities to structural factors. For example, a model developed by Hummer (1996) posits that institutional racism, racial socioeconomic stratification, and individual-level discrimination affect the health and mortality of African Americans through intervening mechanisms such as health care, the physical environment, health and coping behaviors, stress, and social roles and support. Williams’ (1997) fundamental causes model attributes racial and ethnic disparities in health to a number of societal forces such as culture, racism (particularly institutional), economic structures, political and legal factors, as well as biology and geographic origins (Williams, 1997). His model emphasizes the centrality of racism, especially its institutional form, but it also recognizes that “Different combinations of factors in the model may be more salient, depending upon the context, historical period, health outcome, and the research question under consideration” (Williams, 1997, p. 327).

**Social capital.** Social capital, considered an important social determinant of health by influential researchers, occupies a prominent, yet controversial position in the literature on social inequalities in health (Hawe & Shiell, 2000; Kawachi, Kennedy, Lochner, & Prothrow-Stith, 1997; Lynch, Due, Muntaner, & Davey Smith, 2000; Macinko & Starfield, 2001; Putnam, 2000). Interest in the concept of social capital – the notion that individuals receive benefits and incur
obligations through their membership in social networks – grew exponentially from the mid-
1990s in the social sciences and the field of public health (Farr, 2004; Field, 2008; Hawe &
Shiell, 2000; Kawachi et al., 2008; Portes, 1998). In the field of public health, interest in social
capital emerged in the mid-1990s along with renewed interest in the mechanisms that connect
social inequalities and health (Kawachi et al., 2008; Hawe & Shiell, 2000; Moore, Haines, Hawe,
& Shiell, 2006; Stephens, 2008). The term social capital alludes to a link between sociology and
economics (Macinko & Starfield, 2001). The “capital” component of the concept is an economic
metaphor which suggests social capital is related to other, more familiar, forms of capital
(financial, physical, human) (Macinko & Starfield, 2001). In economics, production of goods
and services is a function of capital (i.e., resources) and labor (i.e., number of person hours
required). Capital, which refers to accumulated assets that can be invested with the expectation
of a profitable return in the future, assumes different forms: financial, physical, and human
(Field, 2008; Macinko & Starfield, 2001). While financial capital refers to resources such as
cash holdings, physical capital refers to assets such as land, buildings, machinery, tools, and
equipment that can be used along with labor in production. Human capital, a concept introduced
by Theodore Schultz and Gary Becker in the 1960s, refers to the factors (e.g., innate capacities,
health status, skills, and educational level) that contribute to variations in the productivity of
individual workers (Field, 2008). They posited that improving workers’ human capital by
investing in their health care/insurance, training, and education would lead to improvements in
their productivity (Field, 2008). Since individuals can exchange their human capital for
wages/income, those with higher levels of human capital will generally command greater income
or enjoy higher status than those with lower levels of human capital (Macinko & Starfield, 2001).

The “social” component of the term social capital refers to social relations such as networks and other social structures within which individuals interact with others (e.g., families, friendship networks, status groups, church groups, voluntary associations, civic groups, political organizations) (Macinko & Starfield, 2001). Such groups can represent and/or shape individual identity, norms, beliefs, behaviors, and priorities (Macinko & Starfield, 2001). Through their participation in networks, individuals can share resources such as information, provide or receive instrumental or emotional support, and work together to achieve collective goals which they could not attain by working alone (Macinko & Starfield, 2001). Based on the metaphor borrowed from economics, social capital can be thought of as “the ability of actors to secure benefits by virtue of membership in social networks or other social structures” (Portes, 1998, p. 6). Unlike financial, physical, and human capital, which can be thought of in strictly economic terms because their value can be concretely measured and the relationship between inputs and outputs is direct, social capital as a resource is far less tangible because it emanates from social ties and relationships (Field, 2008).

**Evolution of the concept.** Different scholars have attributed the original use of the term social capital to various individuals. Putnam (2000) credits Lyda J. Hanifan, a state supervisor of rural schools in West Virginia and Progressive era reformer, with first using the term in the early 20th century. In an article on the role of social capital in improving community conditions in rural school districts, Hanifan (1916) used the term to refer to the “goodwill, fellowship, mutual sympathy and social intercourse among a group of individuals and families who make up a social
unit” (p.130). Jane Jacobs, a Canadian-American journalist and activist, used the term in the 1960s to highlight the importance of relationships among neighbors in urban neighborhoods. In *The Life and Death of Great American Cities*, a critique of urban renewal and planning policies of the 1950s, Jacobs (1961) observed that “networks are a city's irreplaceable social capital. Whenever the capital is lost, from whatever cause, the income from it disappears, never to return until and unless new capital is slowly and chancily accumulated” (p. 138). Coleman (1990) credited Glenn C. Loury, an American economist, for first introducing the concept of social capital to economics to “identify the social resources useful for the development of human capital” (p. 301). Loury (1977) referred to social capital, only once, at the end of an essay criticizing the effectiveness of anti-discrimination laws and equal opportunity policies in eliminating racial differences in income. In his concluding remarks Loury (1977) suggested that it may “be useful to employ a concept of ‘social capital’ to represent the consequences of social position in facilitating acquisition of the standard human capital characteristics” (p. 176).

Seminal conceptualizations. Although the term was used by earlier writers, the seminal theoretical work on social capital is attributed to Pierre Bourdieu, a French sociologist, James S. Coleman, an American sociologist, and Robert D. Putnam, an American political scientist (Field, 2008; Foley & Edwards, 1999). They developed three distinct approaches to social capital that are evident in the literature (Foley & Edwards, 1999; Wall, Ferrazzi, & Schryer, 1998).

Bourdieu’s, (1986) conceptualization of social capital, built on the work of Marx, Durkheim, and Weber was developed in the context of his broader work on unequal access to resources and the maintenance of power by elites (Baum, 2000; Field, 2008; Foley & Edwards, 1999; Hawe & Shiell, 2000; Stephens, 2008).
In contrast, Coleman (1988; 1990) grounded his formulation of social capital in rational action theory and the functionalist tradition of Durkheim and Parsons (Foley & Edwards, 1999). He developed his conceptualization of social capital as part of his analysis of the role of social capital in the creation of human capital (Foley & Edwards, 1999). Putnam’s conceptualization of social capital first emerged at the end of his study on the role of civic engagement in the performance of Italian regional governments and in generating economic prosperity and it was further developed in his study of the long-term decline of civic engagement and social capital in the United States (Putnam, Leonardi, & Nanetti, 1993; Putnam, 2000). He was influenced by Alexis de Tocqueville’s (1832) observations that the vibrancy of associational life and high level of civic engagement in early nineteenth-century America were the foundations of social order, democracy, and economic prosperity (Field, 2008). Putnam’s formulation of social capital, strongly tied to Weber’s notion of political culture, focused on how norms such as trust and reciprocity enable members of social networks to take collective action (Foley & Edwards, 1999; Wall et al., 1998). His formulation is also rooted in Durkheim’s notion of social cohesion — that is “how people’s social ties served as the thread from which a wider society wove itself together” (Field, 2008, p. 13).

The literature on social capital reflects two main approaches. The first, termed the “network approach” is most common in sociology and reflects Bourdieu’s and Coleman’s formulations of social capital as the resources or benefits that individuals or groups access through their participation in social networks (Ferlander, 2007; Moore, Shiell, Hawe, & Haines, 2005). The second, referred to as the “social cohesion or communitarian approach” is more commonly used in the fields of political science, economics, development, and public health
(Ferlander, 2007; Moore et al., 2005). This approach incorporates Putnam’s formulation of social capital as a collective resource emanating from social networks characterized by trust and norms of reciprocity, which facilitate civic engagement and coordinated action (Ferlander, 2007; Moore et al., 2005). In the field of public health, the social cohesion or communitarian approach to social capital has predominated, while the network approach has been marginalized and under-utilized (Moore et al., 2005; Moore et al., 2006).

Despite the dominance of the social cohesion or communitarian approach, there is still considerable disagreement in the field of public health about the definition of social capital, whether it is a collective or individual resource for health as well as the appropriate unit of analysis (Kawachi et al., 2004; Lochner, Kawachi, & Kennedy, 1999; Poortinga, 2006; Szreter & Woolcock, 2004). However, Kawachi (2006) points out that “it would be a mistake to view social capital in mutually exclusive terms, as either an individual or collective asset; clearly, it can be both” (p. 991), benefitting, and at times harming both the collective and the individuals within it.

*Bourdieu’s conceptualization.* According to Portes and Landolt (1996), Bourdieu first used the term social capital “in the 1970s to refer to the advantages and opportunities accruing to people through membership in certain communities” (p. 18). Bourdieu’s (1986) formulation of social capital evolved slowly as he developed a broader theory of the reproduction of social inequality through the use of cultural symbols by elite groups as marks of distinction to signify and maintain their privileged position in society (Field, 2008). Although he published an outline of his ideas on social capital titled ‘provisional notes’ in 1980, his formulation of the concept did not receive widespread visibility or recognition in the English-speaking arena until 1986, when
his influential essay, *The Forms of Capital*, was translated into English and published as a chapter in a textbook on the sociology of education (Field, 2008; Portes, 1998). In this essay, Bourdieu (1986) extended the notion of economic capital to cultural and social relations (Field, 2008; Portes, 1998). Viewing capital as accumulated labor, Bourdieu (1986) contended that the structure and distribution of the different types and subtypes of capital represent the structure of the social world. He posited that societal class structures are maintained and reproduced by the relationships and interactions among three forms of capital (economic, cultural, and social) (Bourdieu, 1986).

Bourdieu (1986) defined social capital as:

the aggregate of the actual or potential resources which are linked to possession of a network of more or less institutionalized relationships of mutual acquaintance and recognition – or in other words, to membership in a group – which provides each of its members with the backing of the collectivity-owned capital, a ‘credential’ which entitles them to credit, in the various senses of the word (pp. 248-249).

Social capital as conceptualized by Bourdieu (1986) is instrumental since it refers to the resources individuals gain through their participation in social networks (Bourdieu, 1986; Portes, 1998). Rather than arising naturally, individuals or groups must invest their time and effort to cultivate and maintain social relationships for the purpose of creating this resource (Bourdieu, 1986; Portes, 1998). According to Bourdieu (1986):

investment strategies, individual or collective, consciously or unconsciously aimed at establishing or reproducing social relationships that are directly usable in the short term, i.e., at transforming contingent relations, such as those of neighborhood, the workplace,
or even kinship, into relationships that are at once necessary and elective, implying
durable obligations subjectively felt (feelings of gratitude, respect, friendship, etc.) or
institutionally guaranteed (rights) (pp. 249-250).

Moreover, the profits or benefits that result “from membership in a group…are…the
basis of the solidarity which make them possible” (Bourdieu, 1986, p. 249).

According to Portes (1998), Bourdieu’s definition of social capital has two elements: (1)
the social relationship itself, which makes it possible for individuals to claim access to resources
possessed by their associates and (2) the amount and quality of those resources (Bourdieu, 1986;
Portes, 1998). Hence, the value of an individual’s social capital is dependent on both the number
of connections he or she can successfully mobilize and the amount and value of the different
capitals (e.g., economic, cultural or symbolic2) possessed by each connection (Bourdieu, 1986;
Field, 2008; Kay & Johnston, 2007; Portes, 1998). Social networks are not equal because they
vary by the quality and quantity of the resources possessed by their members and available to
other members of the network (Bourdieu, 1986; Portes, 1998). Furthermore, individuals or
groups have unequal access to network-based resources, and some individuals or groups may be
excluded from accessing the resources connected to a network (Carpiano, 2008). Thus, social
capital functions to reproduce inequality. As noted by Foley and Edwards (1999), Bourdieu’s
conceptualization of social capital highlights the importance of differential access to capital

2 Symbolic capital – refers to the resources available to an individual due to prestige, honor, or recognition.
Bourdieu (1986) defined symbolic capital as “…capital – in whatever form – insofar as it is represented, i.e.,
apprehended symbolically, in a relationship of knowledge or, more precisely, of misrecognition and recognition,
presupposes the intervention of the habitus, as a socially constituted cognitive capacity” (p. 255).
rather than “individual utility maximizing behavior” in shaping both the social as well as economic world (p. 143).

According to Bourdieu (1986) economic theory has reduced the universe of exchanges to economic ones, oriented toward the maximization of profit, and thus self-interested, and it has implicitly defined the other forms of exchange as non-economic (e.g., cultural and social exchanges such as art and marriage), and hence disinterested. Bourdieu challenged this view, contending that, like economic capital, both cultural and social capital should be considered assets that represent the product of accumulated labor (Field, 2008). Moreover, he argued that in order to explain inequality it was important to consider capital and profit in all their forms and to understand the relationships and interactions among all three forms of capital and the ways these forms of capital changed into one another (Bourdieu, 1986).

Bourdieu (1986) saw economic capital as the root of the other forms of capital. He argued that the extent to which one form of capital is convertible to another depends on the degree to which the economic value of the transaction is disguised (Bourdieu, 1986). According to Bourdieu (1986), social and cultural capital are not entirely reducible to economic capital because they:

produce their most specific effects only to the extent that they conceal (not the least from their possessors) the fact that economic capital is at their root, in other words — but only in the last analysis — at the root of their effects (p. 252 ).

Consequently, as noted by Field (2008), “The more transparent the economic value the greater the convertibility, but the lower its validity as a source of social differentiation” (p. 19). Although social and cultural capital are each reducible to economic capital, Portes (1998) notes
that “the processes that bring about these alternative forms are not. They each possess their own
dynamics, and, relative to economic exchange, they are characterized by less transparency and
more uncertainty (p. 4). For example, the lack of clarity in transactions involving social capital,
which are typically characterized by unspecified obligations, uncertain time limits, and the
possibility of violation of reciprocity, helps to mask what would otherwise be simple market
exchanges (Bourdieu, 1986; Portes, 1998).

In accordance with his view of capital as accumulated labor, Bourdieu (1986) argued that
the development and maintenance of social connections, as well as the transformation of one
form of capital to another, has costs, and requires investments (Bourdieu, 1986). Hence, the
creation of social capital requires individuals to invest some economic resources and to have
some cultural knowledge which enables them to form relationships with valued others
(Bourdieu, 1986; Portes & Landolt, 2000). Transforming economic capital into social capital,
say in the form of personalizing a gift, entails that an individual expend his or her time, attention,
care, and concern (Bourdieu, 1986). While such efforts alter the strictly monetary value and
meaning of the exchange, in the long-run they will generate monetary or other forms of benefits
(Bourdieu, 1986). For instance, by investing their social capital, individuals can acquire direct
access to economic resources (i.e., loans, investment tips); increase their access to cultural
capital through contacts with experts or sophisticated persons; or gain institutionalized cultural
capital through affiliation with institutions that confer valued credentials (Bourdieu, 1986;
Portes, 1998).

Bourdieu has been criticized because he represented social capital as having positive
effects, especially for those who possess large volumes of it, but he minimally addressed its
negative effects (Field, 2008). Focusing on social capital as an asset of the privileged used to maintain their superior social position, his theory does not account for how less privileged individuals or groups might also benefit from their social connections (Field, 2008). His theory has also been criticized for being overly individualistic and failing to account for how social capital might also benefit collective actors. In Bourdieu’s account, associational life is only a means to an end for privileged individuals to maintain their social advantage and exclude others (Field, 2008). Despite these shortcomings, Portes (1998) considers Bourdieu’s work on social capital the “most theoretically refined among those that introduced the term in contemporary sociological discourse” (p. 3). Bourdieu offers a clear explanation of how social capital, as a resource embedded in social networks, accumulates, interrelates with other forms of capital, and contributes to their accumulation (Field, 2008). This account is applicable to health inequalities as it underscores how individuals or groups will have differential access to various types of resources based on the quantity and quality of resources possessed by their social connections.

*Coleman’s conceptualization.* Coleman’s work on social capital is considered especially influential in the English-speaking sociological sphere, having given visibility to the concept in American sociology by underscoring its importance in the attainment of human capital (Coleman, 1988; 1990; Foley & Edwards, 1999; Field, 2008; Portes, 1998; Schuller, Baron, & Field, 2000). According to Schuller et al. (2000), Coleman elevated social capital to the forefront of social science research by developing ways to operationalize the concept and subjecting it to empirical inquiry. Coleman’s work on social capital primarily focused on understanding the relationship between educational achievement and inequality (Schuller et al.,
Unlike Bourdieu, Coleman contended that the poor and marginalized could also benefit from social capital (Field, 2008).

In his seminal work, *Social Capital in the Creation of Human Capital*, Coleman (1988) brings together two different schools of thought on social action. The first, rational action theory, is an economic perspective which views the actor as a self-interested individual acting independently to achieve his or her goals, guided by the principle of maximization of utility (Coleman, 1988). The second, a sociological perspective, views the actor “as socialized and action as governed by social norms, rules, and obligations” (Coleman, 1988, p. S95). The latter perspective analyzes action within social context and explains how social context shapes, constrains, or redirects action (Coleman, 1988). By bringing together these two perspectives he is able to explain how people are able to cooperate (Field, 2008). Coleman (1988) conceives of social capital as a particular kind of resource available to an actor (individual or collective) through the social structures in which they participate. His definition of social capital also emphasizes its instrumentality:

Social capital is defined by its function. It is not a single entity but a variety of different entities, with two elements in common: they all consist of some aspect of social structures, and they facilitate certain actions of actors-whether persons or corporate actors-within the structure. Like other forms of capital, social capital is productive, making possible the achievement of certain ends that in its absence would not be possible (Coleman, 1988, p. S98).

Unlike physical and human capital which are the property of the individuals who invest in them, Coleman (1988) states that social capital “inheres in the structure of relations between
actors and among actors. It is not lodged either in the actors themselves or in physical implements of production” (p. S98). Thus, rather than being a property of individuals, social capital is a property of a social structure (e.g., family, organization, community) (Coleman 1988). As such, social capital is a “public good” rather than a “private good” because its benefits do not primarily accrue to the individuals who invest their time and energy in the social relations to create it but to all others within the same social structure (Coleman, 1988). The public good aspect of social capital creates a disincentive for self-interested individuals to invest in social relations to produce it, and as a result, most forms of social capital are produced (or destroyed) mainly as a by-product of other activities (Coleman, 1988; 1990). Moreover, because social capital like other forms of capital is productive, it can be depleted if not renewed (Coleman, 1988; 1990). Coleman (1988) also viewed social capital as context-specific and therefore not completely fungible:

Like physical capital and human capital, social capital is not completely fungible but may be specific to certain activities. A given form of social capital that is valuable in facilitating certain actions may be useless or even harmful for others (p. S98).

Coleman (1988) identified various forms of social capital that constitute useful resources for individuals or groups including obligations and expectations, growing out of trust in the social environment; information channels which facilitate action; and the presence of norms backed by effective sanctions that encourage behavior beneficial to the community (Shortt, 2004). “Closure” - the degree to which actors in a network are connected to one another - is one property of social relations that facilitates the creation of obligations and expectations as well as norms and effective sanctions (Coleman, 1988). In a social structure characterized by a high
degree of closure, an individual failing to meet an obligation develops a reputation because his or her failure becomes known to others in the network besides the person to whom he or she is indebted (Coleman, 1988). This facilitates the imposition of collective sanctions on that individual and thus creates the trustworthiness of the social structure needed to ensure the repayment of the obligation (Coleman, 1988; Field, 2008; Portes, 1998). Similarly, a social structure characterized by a high degree of closure allows for the collective imposition of effective sanctions on an individual whose behavior causes negative externalities for others within that structure and thus ensures adherence to norms (Coleman, 1988; Field, 2008; Portes, 1998).

Coleman (1988) introduced the concept of ‘intergenerational closure’ to explain how community social capital affects children’s educational outcomes. By intergenerational closure he meant the extent to which all parties in a social structure such as, parents, children, teachers, and community leaders, were connected and communicating often and effectively with one another (Field, Schuller, & Baron, 2000). He contended that high intergenerational closure within a social network resulted in strong norms and effective sanctions to monitor and guide children’s behavior, which could be appropriated by all members of a community (Coleman, 1988; Portes, 1998). In comparing the academic performance of Catholic and public high school students, Coleman concluded that the superior outcomes of Catholic high school students were due to the high degree of intergenerational closure that characterized the social and community networks surrounding these schools (Coleman, 1988). Thus, Coleman’s formulation of social capital emphasized its role in social control and as a source of family and community support for children’s educational achievement and development, and it highlighted the complementary
nature of the relationship between social capital and human capital (Coleman, 1988; Portes, 1998; Schuller et al., 2000).

Although Coleman’s formulation of social capital is considered highly influential, especially in American sociology, it has been criticized for a number of reasons (Foley & Edwards, 1999; Schuller et al., 2000). Portes (1998) pointed out that Coleman’s definition of social capital was vague and circular, conflating social capital per se (i.e., the ability to acquire resources and benefits by virtue of membership in different social structures) with the mechanisms that generate it (i.e., obligations and expectations of reciprocity, norms and enforceable sanctions) and its outcomes (e.g., resources such as privileged access to information) (p. 5). Coleman was also criticized for overemphasizing the beneficial effects of dense ties (i.e., close connections among family, friends) as a source of parental, family and community support, as well as a public good, providing norms and sanctions that allowed individuals to cooperate for mutual benefit (Field et al, 2000; Portes, 1998). At the same time, he understated the positive effects of weak ties (non-intimate ties with acquaintances, colleagues, etc.), which might more effectively provide access to new knowledge and resources (Field et al., 2000). As Portes (1998) points out, social capital, in the form of dense ties with accompanying obligations and expectations, norms and sanctions, and closure could result in negative effects such as the “exclusion of outsiders, excess claims on group members, restrictions on individual freedoms, and downward leveling norms” (p. 15). Moreover, while Coleman highlighted the contribution of social capital to equity and justice, he underplayed how social capital may also reinforce social hierarchies and generate new sources of inequality based on factors such as gender, ethnicity, and disability (Field et al., 2000, p. 245).
Putnam’s conceptualization. Putnam popularized the concept of social capital in the 1990s, and his work, more than any other, is cited across a wide range of fields such as political science, economics, development, sociology, and public health (Schuller et al., 2000). Putnam is responsible for the transition of the definition of social capital from an individual or group resource as conceptualized by Bourdieu and Coleman to a collective attribute of communities or even nations (Portes, 2000).

In his seminal work on social capital, Making Democracy Work: Civic Traditions in Modern Italy, Putnam et al. (1993) identified civic community as the factor accounting for the relatively superior performance of northern regional governments compared to southern regional governments (Schuller et al., 2000). The study found that civic engagement, as measured by newspaper readership, voter turnout, and membership in choral societies, soccer clubs, and other groups, was high among citizens in the better performing northern regions and low among the poorer performing southern regions (Putnam et al., 1993). The high levels of civic engagement in the northern regions led to greater trust, enforceable norms, and dense networks of association among citizens as well as economic prosperity (Putnam et al., 1993). In contrast, the low levels of civic engagement in the southern regions led to higher rates of lawlessness, poorer governance, and weaker economic performance (Putnam et al., 1993). These regional differences in the quality of governance are attributed to “longstanding traditions of civic engagement (or its absence)” (Putnam, 1995, p. 66).

The notion of social capital, explicitly brought in towards the end of the study, is defined as “features of social organization, such as trust, norms, and networks that can improve the efficiency of society by facilitating coordinated action” (Putnam et al., 1993, p. 167). Putnam’s
formulation of social capital in his Italian study is basically an extension of Coleman’s (1988; 1990). According to Putnam (1993), while social capital along with physical and human capital stimulate economic growth, social capital also “enhances the benefits of investment in physical and human capital” (p. 36). He argued that trust has a positive effect on social relations because networks of civic engagement foster strong norms of generalized reciprocity (i.e., that an individual doing a favor for someone can expect at some later point that person or someone else will return the favor) (Putnam, 1993). Networks of civic engagement also enable coordination and communication and augment information about the trustworthiness of other individuals (Putnam, 1993). For Putnam (1993), social capital forms a ‘virtuous circle’ decreasing the likelihood of opportunism and corruption in economic or political transactions that take place within dense networks of social interaction.

In line with Coleman’s (1988) formulation, Putnam (1993) sees social capital as a “moral resource” whose volume will increase with use but deplete if unused. He also contended that social capital tends to be reinforcing and cumulative because the connections and trust developed as a result of successful collaborations in one activity could be carried over to future collaborations in unrelated activities (Putnam, 1993). Consequently, those who have social capital tend to accrue more of it (1993). Like Coleman (1988; 1990), Putnam (1993) also saw social capital as a public good because it is the by-product of social relations whose benefits accrue to both those who participate in its creation as well as those who do not. Unlike Coleman (1988; 1990), who focused primarily on dense ties such as the family, Putnam paid more attention to the resources and benefits that accrued from loose networks such choral societies and rotating credit associations (Field, 2008). Putnam’s explanation is basically that associations
promote civic engagement through the social capital they produce (Foley & Edwards, 1998). In his account, associational life produces the habits of cooperation, mutual trust, norms and values, and social networks that contribute to the social trust and civic engagement democracy needs to thrive (Foley & Edwards, 1998).

In a series of essays beginning in 1995 and culminating in his massive work, *Bowling Alone: The Collapse and Revival of American Community*, Putnam (2000) advances the thesis that civic engagement and social capital in the United States have declined since the 1960s. In *Bowling Alone*, he offers a slightly different definition of social capital as “connections among individuals – social networks and the norms of reciprocity and trustworthiness that arise from them” (p. 19). Field (2008) observes that this definition differed from his earlier definitions of the concept “in that it presented trust (together with reciprocity) as an essential element of norms that arise from social networks and, thus leaves us with two rather than three primary ingredients, namely networks and norms” (Field, 2008, p. 35).

In *Bowling Alone*, Putnam (2000) presents estimates of the level of social capital for each of the 50 U.S. states based on the Social Capital Index he developed which includes 14 distinct measures of social capital (Field, 2008; Putnam, 2000). He also presented a wide range of national and state-level data to document the general secular trends in the decline of social capital; of the proportion of Americans who socialize with their neighbors more than once a year; and of trust over time (Putnam, 1995). In contrast, he noted an increase over time in the proportion of Americans socializing with friends who do not live in their neighborhood (Putnam, 1995). He then provided evidence of the association of social capital with a wide range of
indicators of well-being such as education, economic prosperity, health, happiness, and democratic engagement (Field, 2008; Putnam, 2000).

Attributing the decline in civic engagement and the erosion of social capital to what he called the “technological transformation of leisure,” most notably the rise in television viewership, Putnam (1995; 2000) claimed that this activity encroached on Americans’ leisure time, limiting their time to engage in other activities that provided opportunities for social capital formation. Putnam (2000) also attributed the demise of social capital to generational succession, arguing that those born between 1910 and 1940 (i.e., the “long civic generation”) were association joiners, while the two generations following them, the baby boomers and the "X-generation," born from the 1940s to the 1980s, were less inclined to participate in associations (Putnam, 2000; Szreter, 2002).

Putnam’s (2000) “Bowling Alone” thesis has generated much controversy and elicited criticisms from a wide range of scholars and researchers who have questioned his conceptualization of social capital, challenged his methodology, findings, and explanations regarding the decline in social capital in the United States, and raised concerns about the policy implications of his conclusions (Alesina & La Ferrara, 2000; Costa & Kahn, 2001; Durlauf, 2002; Muntaner & Lynch, 2002; Portes & Landolt, 2000; Woolcock, 1998). His social capital thesis has been criticized for failing to specify the conditions under which face-to-face interactions produce desirable civic traits, understating the negative aspects (‘dark side’) of social capital, under-emphasizing the role of macro-level economic changes in undermining civic engagement in the United States, and avoiding politics and political structure (Foley & Edwards, 1999; Portes & Landolt, 1996). Notwithstanding the numerous critiques of his work, Putnam’s
(1993; 2000) formulation of social capital has influenced and been adopted by a wide range of scholars, researchers, and advocates working in fields such as economics, development, sociology, political science and public health (Foley & Edwards, 1999; Macinko & Starfield, 2001).

**Dimensions of social capital.** Social capital has been characterized by two dimensions – cognitive and structural. According to a model developed by Krishna and Shrader (2000) cognitive social capital refers to the “values, attitudes, norms, and beliefs that influence trust, solidarity and reciprocity and which facilitate collective action among members of a community” (Krishna & Shrader, 2000, p. 8). This dimension of social capital predisposes individuals and groups towards mutually beneficial action (Krishna & Shrader, 2000). In contrast, structural social capital refers to externally observable features of social organization, such as the density of social networks or patterns of civic engagement, composition, practices, and scope of informal or formal local-level networks and institutions as well as the roles, rules, precedents, and procedures of such organizations (Islam et al., 2006; Krishna & Shrader, 2000; Uphoff, 2000). This dimension of social capital facilitates the mutually beneficial actions of individuals and groups (Krishna & Shrader, 2000). Harpham, Grant, and Thomas (2002) characterize cognitive social capital as “what people feel” in terms of social relations and indicate it is associated with “perceptions of support, reciprocity, sharing, and trust” (Harpham et al., 2002, p. 106). On the other hand, they characterize structural social capital as “what people do” in terms of social relations and define it as “the extent and intensity of associational links or activity” (Harpham et al., 2002, p. 106).
The cognitive and structural dimensions of social capital are interrelated but distinct (Krishna & Shrader, 2000). Measures of the cognitive dimension of social capital include individuals’ perceptions of the level of interpersonal trust, sharing, and reciprocity, while measures of the structural dimension include the extent and intensity of associational links and activity such as informal sociability, density of civic associations, civic engagement, and social participation (Islam et al., 2006). According to Krishna and Shrader (2000), both dimensions of social capital “must be combined to represent the aggregate potential for mutually beneficial collective action that exists within any community” (p. 5).

While Bourdieu, Coleman, and Putnam do not explicitly refer to cognitive or structural social capital, they each include either one or both dimensions in their conceptualizations. Bourdieu (1986) primarily focuses on the structural dimension (i.e., networks), while Coleman (1988; 1990) (i.e., networks, and norms) and Putnam (1995, 2000) include both dimensions in their formulations (i.e., networks, norms, trust, or associations) in their conceptualizations.

**Forms of social capital.** Social capital also takes different forms that can be characterized by type of social network and the nature of ties among individuals within the network. Ferlander (2007) identifies a number of features of social networks including the direction (horizontal or vertical), level of formality (informal or formal), and strength (weak or strong) of their ties. Horizontal social networks are characterized by ties among individuals or groups that are more or less equal in status, while vertical networks are characterized by ties among individuals and/or groups that are unequal in status and power (Islam et al., 2006).

In *Bowling Alone*, Putnam (2000) identified two forms of social capital; bonding and bridging, which both represent horizontal social relations.
**Bonding social capital.** Putnam (2000) credits the term bonding social capital to Gittell & Vidal (1998) who describe it as “the type that brings closer together people who already know each other” (p. 15). Bonding social capital refers to social networks whose members are similar in terms of sociodemographic (e.g., age, gender, race, ethnicity) and socioeconomic (e.g., income, education, occupation, class) characteristics (Ferlander, 2007). According to Ferlander (2007), bonding social capital derives from informal and frequent social interactions among people who have close ties such as family members, relatives, neighbors, friends, and colleagues or among social groups whose members share similar characteristics. Interactions in such networks tend to foster trust and transmit and enforce behavioral norms, serve to strengthen exclusive identities, maintain homogeneity and in-group loyalty, and engender solidarity (Ferlander, 2007; Field, 2008). Such homogeneous social networks serve to generate mutual aid (emotional and instrumental support) among its members and protect the vulnerable (Ferlander, 2007; Islam et al., 2006). However, bonding social capital can also have negative consequences such as mistrust of and exclusion of outsiders, intergroup conflict, and localism (Ferlander, 2007).

**Bridging social capital.** Bridging social capital refers to social relations among persons in heterogeneous social networks that cut across different social groups (Ferlander, 2007). This form of social capital bridging derives from less frequent, informal, or formal social interactions among individuals or groups who have weak ties with others who are dissimilar to them and are outside their immediate or localized network (Ferlander, 2007). Such social networks bring together individuals or groups of diverse backgrounds and facilitate their access to external resources and new information (Ferlander, 2007).
Putnam (2000) developed his concept of bridging social capital drawing on the Granovetter’s (1973) work distinguishing “strong” and “weak” ties and emphasizing the “strength of weak ties” (relationships with individuals outside of a person’s immediate networks). Granovetter (1973) found that weak ties are important in finding jobs because they provide new information and opportunities (Ferlander, 2007; Macinko & Starfield, 2001).

According to Granovetter (1973), unlike an individual’s close friends (strong ties), an individual’s acquaintances (weak ties) are less likely to be involved with one another and more likely to be connected to networks that are different from their own. Because an individual’s close friends are likely to have overlap in contact with those he or she already knows, the information they are privy to is likely to be the same as that which the individual already has (Granovetter, 1973). In contrast, an individual’s acquaintances are less likely to know one another and provide an individual with a bridge to other social networks where he or she can obtain information and ideas not available in his or her own network of close friends (Granovetter, 1973).

According to Putnam (2000), “bridging social capital can generate broader identities and reciprocity” (Putnam, 2000, p. 23). Moreover, bridging social capital is key to the success of civil society and is an important source of other benefits for individuals, communities, and societies (Islam et al., 2006). In Putnam’s view, it is bridging social capital that is important for a well-functioning democracy because it connects citizens across diverse groups, and facilitates their civic engagement and participation in local and national affairs (Szreter, 2002).

For Putnam (2000), “Bonding social capital constitutes a kind of sociological superglue, whereas bridging social capital provides a sociological WD-40” (p. 23). He observed that
bonding social capital helps people to “get by,” but bridging social capital helps people to “get ahead” (Putnam, 2000).

Linking social capital. Szreter and Woolcock (2004) introduced the concept of linking social capital to make “a distinction among all those social relationships that would otherwise be grouped together in the ‘bridging’ social capital category” (p. 655). They define linking social capital as “norms of respect and networks of trusting relationships between people who are interacting across explicit, formal, or institutionalized power or authority gradients in society” (Szreter & Woolcock, p. 655). Although linking social capital can be seen as a subdivision of bridging social capital in that both involve connections among individuals or groups that are different from one another, it a distinct concept referring to vertical rather than horizontal social relationships connecting diverse individuals or groups who have unequal levels of power, status, or resources (Islam et al., 2006; Szreter & Woolcock, 2004). According to Szreter and Woolcock (2004), linking social capital is important especially for the poor because it provides individuals or groups with less power and authority with the opportunity to connect to representatives of institutions responsible for allocating resources or planning and delivering services that are important to their health and welfare. However, like bonding and bridging social capital, linking social capital can also produce negative effects such as nepotism, corruption, suppression, and unequal access to valued resources (Szreter & Woolcock, 2004).

Evidence: Social capital and health. Studies regarding the relationship between social capital and health (both physical and mental) have been carried out at the micro- (individual) meso- (neighborhood, community) and macro- (state, region, country) levels (see reviews by Almedom, 2005; De Silva, McKenzie, Harpham, & Huttly, 2005; Mackinko & Starfield, 2001;
Kawachi et al., 2004; Kim et al., 2008; Islam et al., 2006). Since social capital will be analyzed at the individual level in this study, this review will primarily focus on evidence of the relationship between social capital and health at the micro-level of analysis.

Micro-level studies reflect the conceptualization of social capital as an attribute of individuals. This school of thought views social capital as a resource that individuals accrue through their participation in social networks and focuses on social ties among individuals and households (Bourdieu, 1986; Ferlander, 2007; Kay & Johnston, 2007; Portes, 1998). Measures of social capital at the micro-level of analysis reflect individual attributes (Islam et al., 2006). Individual-level studies tend to measure the cognitive and/or structural dimensions of social capital. Many different indicators of the cognitive dimension of social capital have been used in studies examining its association with health, such as interpersonal trust, trust in government/institutions, sense of collective efficacy/optimism, sense of personal identification with community, willingness to discuss problems with neighbors, attitudes towards cooperation, and expectations of reciprocity (Islam et al., 2006; Kawachi et al., 2004; Mackinko & Starfield, 2001). Examples of the various indicators of the structural dimension of social capital used in studies of its association with health include participation in social networks, participation/attendance in voluntary organizations, and use of neighborhood facilities (Islam et al., 2006; Kawachi et al., 2004; Mackinko & Starfield, 2001). However, the most common measures of social capital at the individual level are individual perceptions of trust or reciprocity and/or individual levels of social and civic participation (Kawachi et al., 2004).

**Evidence: Cognitive social capital and health.** Three of the four U.S. studies reviewed examined the association of cognitive social capital with health and found significant
relationships. Barefoot et al. (1998) found that high levels of trust were significantly related to better self-rated health and greater life satisfaction at baseline among men and women ages 55 to 80 years. At 8-year follow-up, trust was positively associated with functional health but not with life satisfaction (Barefoot et al., 1998). High levels of trust were also associated with longer survival at 14-year follow-up (Barefoot et al., 1998). Schultz, O’Brien, and Tadesse, (2008) used data from the Social Capital Community Survey (SCCS) of Duluth, Minnesota and Superior, Wisconsin. They found that higher levels of social trust predicted better self-rated health.

Examining the direct and indirect effects of social capital among Latinos and Whites, utilizing nationally representative data from the 2000 Social Capital Community Benchmark Survey, Boyas, (2010) found that higher levels of social trust had a direct effect on better self-rated health for both Latinos and non-Hispanic Whites, but its effects were stronger among Latinos.

The findings regarding the relationship between cognitive social capital and health were mixed in the non-U.S. studies reviewed. For example, a study among adults in Saskatchewan, Canada, included a number of measures of cognitive social capital but found that only willingness to turn to a work colleague in a time of trouble was positively associated with self-rated health after controlling for education and income (Veenstra, 2000). No significant association was found for indicators of trust, identity, and commitment with self-rated health (Veenstra, 2000). An English study conducted by Giordano and Lindström (2010) examined how temporal changes in social capital, together with changes in material conditions and other health determinants, affect associations with self-rated health over a six year period. They found that the inability to trust was significantly associated with deteriorating self-rated health, even after simultaneously controlling for all significant variables (Giordano & Lindström, 2010).
The Scandinavian studies reviewed provide strong evidence of the association of cognitive social capital with health. In a study of a bilingual area in Finland, Hyyppä and Mäki, (2001) found mistrust to have a significant inverse and independent association with self-rated health in the whole sample after controlling for language and a range of health-related variables. The study also found that Finnish-speakers were more likely to mistrust others than were Swedish-speakers (Hyyppä & Mäki, 2001). Using the same dataset, Hyyppä and Mäki (2003) conducted another study to determine which civic and social activities were important for health. Factor analysis of the social capital items yielded four factors of which the second one included reciprocal trust as well as number of close friends and friendship ties. Labelled trusting friendship networks, this factor was among those found to be significantly associated with good self-rated health (Hyyppä & Mäki, 2003). The findings also indicate that trusting friendship networks were significantly more frequent among Swedish-speakers than their Finnish-speaking counterparts (Hyyppä & Mäki, 2003). Although the minority, Swedish-speakers enjoyed better health than their Finnish-speaking counterparts, and the researchers suggested that these health disparities may be explained by the unequal distribution of social capital (Hyyppä & Mäki, 2003).

In a prospective study using a nationally representative sample of Finns aged 30-99 years, Hyyppä, Mäki, Impivaara, and Aromaa (2007) found gender- and age-related associations between interpersonal trust and reduced mortality. After adjusting for demographic, life style and biological risk factors as well as for health and SES, interpersonal trust predicted all-cause as well as cardiovascular mortality in women but not in men (Hyyppä et al., 2007). Gender differences were also found in the interaction of interpersonal trust and age (Hyyppä et al.,
Interpersonal trust was a significant, independent predictor of reduced all-cause mortality in older men (> 65 years) and of reduced all-cause and cardiovascular mortality in middle aged women (Hyyppä et al., 2007).

In a Finnish study, Nieminen, et al. (2010) explored which dimensions of social capital were related to self-rated health and psychological well-being. High levels of trust and reciprocity were among the dimensions found to be associated with good self-rated health after controlling for age, gender, education, living arrangements, income, type of region, long-standing illness, and functional capacity (Nieminen, et al., 2010). The study also found that the positive association of trust with psychological well-being was much stronger than the association with other dimensions of social capital and that this strong association held even after controlling for all the other variables (Nieminen et al., 2010). A Swedish study by Ahnquist, Wamala, and Lindström (2012), found that low interpersonal (horizontal) trust and low political/institutional (vertical) trust in parliament were significantly associated with poor health outcomes (measured by psychological distress, self-rated health, and musculoskeletal disorders) for both men and women.

Using a nationally representative sample of the adult Russian population, Rose (2000) found a significant positive association between sense of control over one’s life and feeling most people could be trusted with both physical and emotional health. Moreover, among the 18 social capital indicators used in the study (both cognitive and structural), sense of control over one’s life was the strongest predictor of both physical and emotional health (Rose, 2000). However, the association of feeling most people could be trusted with physical and emotional health while significant was not strong (Rose, 2000). In a study conducted in urban China, Sun, Rehnberg,
and Meng (2009) found that high individual-level perception of reciprocity and social support was significantly associated with a lower probability of poor self-rated health (Sun et al., 2009).

A cross-national study comparing samples of elderly adults in Germany and the United States found that lack of reciprocity and civic mistrust were strong indicators of poor self-rated health and depression in the U.S. sample, but their effects diminished after controlling for socioeconomic status (income and education), housing features (housing tenure, type of housing, length of residence, and overall housing satisfaction), emotional support, and social contacts (Pollack & von dem Knesebeck, 2004). However, these two variables were not strongly associated with functional limitations, and their effects diminished after controlling for socioeconomic status and the other covariates (Pollack & von dem Knesebeck, 2004). In the German sample, lack of reciprocity and civic mistrust were significantly associated with poor self-rated health, and these effects held with only slight changes after controlling for socioeconomic status, housing features, emotional support, and social contacts (Pollack & von dem Knesebeck, 2004). Moreover, lack of reciprocity was significantly associated with depression, but civic mistrust was not (Pollack & von dem Knesebeck, 2004). These two variables were weakly associated with functional limitations in the German sample (Pollack & von dem Knesebeck, 2004). The findings indicate that the association of these two indicators of cognitive social capital with health varied by health indicator and national context (Pollack & von dem Knesebeck, 2004).

**Evidence: Structural social capital with health.** The results of studies examining the association of individual-level structural social capital with health are mixed. The U.S. study by Schultz et al. (2008) found that higher associational involvement, organized interaction, informal
socializing, and volunteer activity were significant predictors of better self-rated health. Mukerjee’s (2013), U.S. study using data on 39,842 individuals from the General Social Survey from 1972 to 2008 found that while both personal (i.e., frequency of visiting relatives, neighbors, friends or bars) and impersonal (i.e., memberships in 16 categories of organizations) interactions were associated with better self-rated health, interacting with friends had the strongest effect. Comparing the effects of personal versus impersonal interactions, the study found that a one standard deviation ($SD$) increase in the probability of meeting friends versus joining a club or association was associated with a higher probability of being in very good or excellent health (Mukerjee, 2013). Visiting a friend more often was associated with greater health benefits than visiting a neighbor more often, but the latter was more beneficial than visiting relatives, which in turn was better than visiting bars very often (Mukerjee, 2013). The associations between personal and impersonal interactions and health also varied by race, gender, age, and education. Friendship was very important for self-rated health in most demographic groups (Mukerjee, 2013). Socializing intensely with neighbors was associated with the probability of reporting good to excellent health for Blacks (Mukerjee, 2013). However, Blacks were the only group for whom going to bars was both significant and negatively associated with health (Mukerjee, 2013). For women, visiting friends intensely was associated with a greater probability of good health than was visiting with neighbors (Mukerjee, 2013). In contrast, for men, visiting neighbors and visiting bars more often were associated to the same extent with better health (Mukerjee, 2013). Interacting frequently with friends was associated with better self-rated health for youth and the middle aged with the strongest effect among the latter (Mukerjee, 2013). Visiting friends frequently was significantly associated with better self-rated health for both those who had some
schooling and those who completed college (Mukerjee, 2013). In contrast to Schultz et al. (2008) and Mukerjee (2013), Boyas (2010) found that among Latinos and non-Hispanic Whites, structural forms of social capital (i.e., number of close friends and diversity of network) were not associated with self-rated health.

Veenstra’s (2000) Canadian study found that neither participation in clubs, the nature of the clubs themselves, socializing with family and friends, nor close relationships with neighbors were significantly associated with self-rated health status. Nor did Veenstra (2000) find an association between the measures of civic or political participation and self-rated health (Veenstra, 2000). Only participation in clubs among the elderly, frequency of socialization with work-mates, and attendance at religious services were positively associated with self-rated health even after adjusting for education and income (Veenstra, 2000).

Another study conducted in a mid-sized Canadian city found that overall associational involvement was significantly but weakly associated with emotional distress and overweight status and marginally associated with poor self-rated health before and after controlling for age, gender, and neighborhood of residence (Veenstra, et al., 2005). After additionally adjusting for health behaviors and coping skills, associational involvement remained a moderately strong and statistically significant predictor of overweight status, but it was not a significant predictor of emotional distress or poor self-rated health (Veenstra et al., 2005). The significant positive relationship found between overall associational involvement and number of chronic conditions did not persist after adjusting for age, gender, and neighborhood of residence (Veenstra et al., 2005). Thus, greater associational involvement was associated with a lower likelihood of being overweight before and after controlling for all the predictors cited above (Veenstra et al., 2005).
The findings suggest that the relationship of associational involvement and both poor self-rated health and emotional distress was apparently explained in part by health behaviors and/or coping skills (Veenstra et al., 2005). The interaction between associational involvement and neighborhood of residence was not a statistically significant predictor of poor self-rated health, emotional distress, or overweight status (Veenstra et al., 2005). The lack of significant interactions indicated that the associations between neighborhood of residence and associational involvement with health were independent of one another (Veenstra et al., 2005). This finding suggested that neighborhood of residence did not help to explain the positive effects of associational involvement on health (Veenstra et al., 2005).

In their English study, Giordano and Lindström (2010) found that increased levels of structural social capital (i.e., social participation) were significantly associated with improved self-rated health over time (Giordano & Lindström, 2010). Even after adjusting for other well-known health determinants (i.e., household and individual income) social participation appeared to independently predict self-rated health (Giordano & Lindström, 2010). Rose’s (2000) Russian study examined the associations of various indicators of structural social capital with physical and emotional self-rated health and found variations in the associations by social capital indicator and health indicator. Belonging to organizations was positively associated with physical health but was not associated with emotional health (Rose, 2000). Church attendance was negatively associated with physical health but was not associated with emotional health (Rose, 2000). Social exclusion was negatively associated with emotional health but was not associated with physical health (Rose, 2000). Participating in market and anti-modern networks were both positively associated with physical and emotional health. In contrast, participation in
informal networks was negatively associated with physical and emotional health (Rose, 2000). Another Russian study conducted by Rojas & Carlson (2006) among a sample of adults in Taganrog found positive significant associations between both being a member of a trade union or a political organization and being a member of any other organization and self-rated health when compared with not being members of such organizations.

The Finnish study by Hyyppä and Mäki (2001), found significant, positive, and independent relationships between number of friends always available to help, membership in any religious association and self-rated health after controlling for language and a range of health-related variables in the whole sample (Hyyppä & Mäki, 2001). The study also found that Finnish-speakers were more likely to be less active in community events (Hyyppä & Mäki, 2001). Considering that the ecological and socioeconomic conditions were about the same for both groups, the researchers concluded that the health inequalities between the two language groups appear to be related to an uneven distribution of social capital. The higher stock of social capital held by the Swedish-speaking group was associated with their better health status (Hyyppä & Mäki, 2001). In another study using the same dataset, Hyyppä and Mäki (2003) found that associational activity, friendship network, and religious involvement were significantly associated with good self-rated health. The findings also indicate that hobby club activity, religious involvement, and avoidance of intoxication-prone drinking behavior were significantly more frequent among Swedish-speakers than their Finnish-speaking counterparts (Hyyppä & Mäki, 2003). These findings suggest that the observed disparities in health between the two ethnic groups are related to the greater social participation in hobby groups and religious
involvement among the Swedish-speaking minority community than the Finnish-speaking majority (Hyyppä & Mäki, 2003).

The prospective Finnish study conducted by Hyyppä et al. (2007) found that leisure participation predicted reduced all-cause mortality and cardiovascular mortality. However, the associations between leisure participation and mortality were gender- and age-related (Hyyppä et al., 2007). In men, after adjusting for demographic, life style, and biological risk factors, as well as health and SES, leisure participation was associated with reduced all-cause mortality but not with reduced cardiovascular mortality (Hyyppä et al., 2007). The association between leisure participation and all-cause mortality seemed to be related to economic status in men, since it was weakened when household income was also controlled (Hyyppä et al., 2007). The study also found that in middle-aged men (30-65 years) reduced all-cause mortality was independently predicted by leisure participation (Hyyppä et al., 2007). In women, leisure participation predicted reduced all-cause mortality, even after adjusting for demographic, life style, and biological risk factors as well as for health and SES (Hyyppä et al., 2007).

Nieminen et al.’s (2010) Finnish study found that positive statistically significant relationships between social participation and networks (social activities and meeting friends) as well as self-rated health and psychological well-being. These relationships remained statistically significant even after controlling for age, gender, education, living arrangements, income, type of region, long-standing illness, and functional capacity (Nieminen et al., 2010). They also found a statistically significant interaction of social participation and networks with functional capacity (Nieminen et al., 2010). A high level of social participation was related to good self-rated health regardless of the level of functional capacity (Nieminen et al., 2010). This association was
stronger among those with functional limitations than among those without functional limitations (Nieminen et al., 2010). Ahnquist et al.’s (2012) Swedish study, found low social participation (participating in less than 2 activities of formal or informal groups and in other activities during the last 12 months) was significantly associated with poor health outcomes (Ahnquist et al., 2012). However, these results only showed significant associations with poor self-rated health for women and with poor self-rated health and psychological distress for men (Ahnquist et al., 2012). In contrast, Sun et al.’s (2009) Chinese study found no significant association between social participation (i.e., quantity and frequency of group participation and the frequency of community participation) and interpersonal relationship network (i.e., number of close relatives, number of close friends, and the occupations of these persons) and self-rated health.

Pollack and von dem Knesebeck’s (2004) cross-national comparison found that in the U.S. sample, lack of participation (i.e., attending a church, charity group, sports club, self-help group, or other local activity at least once a month) was only significantly associated with poorer self-rated health when gender and age were controlled (Pollack & von dem Knesebeck, 2004). After controlling for socioeconomic status, housing features, emotional support, and social contacts, its effect diminished (Pollack & von dem Knesebeck, 2004). Lack of social participation was not strongly associated with functional limitations, and its effects diminished after controlling for socioeconomic status and the other covariates (Pollack & von dem Knesebeck, 2004). In the German sample, the study found that lack of participation was associated with poorer self-rated health and depression after controlling for age, gender, socioeconomic status, housing features, emotional support, and social contacts (Pollack & von dem Knesebeck, 2004). The finding that social participation was a stronger predictor of health in
Germany than in the United States indicates that the effects of social capital on health are
determined by context (Pollack & von dem Knesebeck, 2004).

This review shows consistent findings of significant and strong relationships between
measures of cognitive social capital and health. However, the findings regarding the relationship
between indicators of structural social capital and health were mixed.

Evidence: Social capital and HIV/AIDS in the United States. Although the literature on
social capital and health is extensive, the literature providing evidence of the relationship
between social capital and HIV/AIDS is more limited and includes few U.S. studies. The U.S.
studies measure the relationship between social capital and HIV/AIDS, other sexually
transmitted diseases, or sexual risk behaviors primarily at the state-level. Using Putnam’s 14-
variable social capital index, which combined cognitive and structural dimensions, Holtgrave
and Crosby (2003) found a significant inverse association of social capital with AIDS,
gonorrhea, syphilis, and chlamydia case rates at the state level. Other U.S. studies, while not
addressing HIV directly, have found a relationship between state-level social capital and
outcomes related to sexual risk taking such as other STDs, adolescent pregnancy risk and
protective factors, and teen pregnancy rates (Crosby & Holtgrave, 2006; Crosby et al., 2003;
Semaan et al., 2007).

A study conducted in the 48 contiguous U.S. states, found a significant inverse
relationship between state-level social capital (using Putnam’s public use data set) and rates of
gonorrhea and syphilis (Semaan et al., 2007). However, multivariate analyses showed that social
capital was not associated with rates of gonorrhea or syphilis when adjusting for state variation
in racial composition and that states with a higher percentage of African-American residents had
higher STD rates (Semaan et al., 2007). Social capital was negatively associated with STD rates when state variation in racial composition was excluded from the analysis (Semaan et al., 2007). The results indicate that the association between social capital and STD rates was influenced by the association between social capital and state variation in racial composition and by the association between state variation in racial composition and STD rates (Semaan et al., 2007). The researchers suggest that sexual networks and sexual mixing patterns drive the association between social capital and STD rates (Semaan et al., 2007).

Crosby et al. (2003) also used Putnam’s 14-variable social capital index and found that social capital was negatively associated with certain sexual risk behaviors for both males and females (ever had sex, sexual debut before age 13, sexually active in past three months, ever pregnant, or caused pregnancy) and for males only (having sex with at least four partners) (Crosby et al., 2003). Social capital was positively associated with protective sexual behavior (birth control use at last sex) for both males and females, but it was not significantly associated with condom use at last sexual encounter for either males or females (Crosby et al., 2003). However, a multivariate analysis found a significant positive association between social capital and females’ use of birth control pills (Crosby et al., 2003). The researchers suggest that social capital may be an important factor in adolescents’ sexual risk and protective behaviors and that the specific mechanisms may differ for males and females with males possibly being more likely to benefit from increased social capital (Crosby et al., 2003). Another U.S. state-level study, among females 15-19 years of age found a significant negative association between social capital (measured by Putnam’s 14-variable index) and teen pregnancy rates (Crosby & Holtgrave, 2006).
Evidence: Social capital and HIV/AIDS in Sub-Saharan Africa. Studies conducted in sub-Saharan Africa at the individual-, household-, and population-level provide the most extensive evidence for the association between social capital and HIV/AIDS, but results have been mixed. Campbell, Williams, & Gilgen’s (2002) study of the relationship between membership of various voluntary community organizations and HIV infection, casual sex, condom use, and alcohol consumption found some significant relationships that varied by direction, gender, age, and type of associational membership. Gregson et al.’s (2004) study of young women found that participation in local community groups was often positively associated with successful avoidance of HIV infection. However, whether or not these associations held depended on how well the group functioned, the purpose of the group, and the educational level of the individual participant (Gregson et al., 2004).

A study among males and females ages 14-35 found that the cognitive dimensions of social capital (i.e., strong community relations, characterized by a sense of mutual support, reciprocity, and collective mobilization around common concerns) were associated with lower levels of HIV risk among males and to a lesser extent among females (Pronyk et al., 2008). However, higher levels of structural social capital (i.e., expanded social group membership) exacerbated HIV risk among females (Pronyk et al., 2008). Another study examined the effect of community group membership on the risk of acquiring HIV infection among men (ages 17–54 years) and women (ages 15–44 years) (Gregson et al., 2011). The population-level findings indicate that higher participation at baseline in community groups was associated with fewer new HIV infections and less risky behavior patterns among women over the following three years. This effect was explained to some extent by these communities’ older age structures and less
developed and more remote locations (Gregson et al., 2011). However, no associations were found among men (Gregson et al., 2011). At the individual-level, women who participated in a wide range of different community groups had lower HIV incidence rates and were more likely to have adopted protective sexual behavior than women with no prior participation in these groups (Gregson et al., 2011). Among men, participation in community groups was associated with adoption of safer behavior but not with lower HIV incidence (Gregson et al., 2011).

In summary, the evidence regarding the relationship between social capital and HIV/AIDS in the United States is sparse, but studies examining state-level AIDS case rates, other STDs, and other health outcomes related to sexual risk taking such as teen pregnancy, have shown that social capital is generally health-protective. More extensive evidence comes from sub-Saharan Africa, but the results of studies have been mixed, indicating that not all social capital is health-promotive or protective and that its effects differ by factors such as age, gender, and the degree of remoteness or development of communities.

**Evidence: Socioeconomic status, social capital, and health.** Several studies examined the independent and mediating or moderating associations of socioeconomic factors and social capital with health. Boyas’ (2010) U.S. study examined the direct and indirect effects of multiple socioeconomic variables and social capital on self-rated health and differences in the strength of the effects of these variables. The study found that higher levels of social trust had a direct effect on better self-rated health for both Latinos and non-Hispanic Whites, but the effects were stronger among Latinos. The study found that for both Whites and Latinos there were significant direct effects of education and income on self-rated health (Boyas, 2010). It also found a significant direct effect of employment on self-rated health for Whites but not for Latinos.
Moreover, significant indirect associations were found for education, employment, and income with self-rated health through social trust among Whites (Boyas, 2010). However, among Latinos only income had a significant indirect effect on self-rated health through social trust (Boyas, 2010). The direction of all the significant associations was positive (Boyas, 2010). Moreover, the direct or indirect effect on self-rated health of the three socioeconomic variables was stronger for Whites than for Latinos, and the total effect of education, employment, and income was greater than the effect of social trust on self-rated health (Boyas, 2010).

Rose’s (2000) Russian study tested a composite model, examining the relationship of different forms of capital (defined as a stock of resources used to produce goods and services) on self-rated physical and emotional health. He defined social capital instrumentally as the stock of networks (relationships between individuals) that are used to produce goods and services such as health in society (Rose, 2000). He found that both human capital (i.e., age, subjective social status, gender and income) and social capital (i.e., involvement or exclusion from formal and informal networks; friends to rely on when ill; control over one's own life; and trust) had significant independent effects on self-rated physical and emotional health (Rose, 2000). Moreover, social capital increased physical and emotional health more than human capital, and the combined effects of human and social capital on self-rated health were greater than their independent effects (Rose, 2000).

In another Russian study, Rojas and Carlson (2006) found that social capital was stratified by educational capital and that its effect on health differed depending on the volume of educational capital possessed (Rojas & Carlson, 2006). Membership in a trade union or political
organization, for individuals with secondary general education or less, had a statistically significant and positive effect on health, while membership of any organization did not (Rojas & Carlson, 2006). In contrast, for individuals with higher or incomplete higher education, the association between membership in a trade union or political organization with health was positive but not statistically significant (Rojas & Carlson, 2006). However, membership in any other organization was significantly and positively associated with health for individuals with higher or incomplete higher education (Rojas & Carlson, 2006). These findings indicate that both membership in a trade union or political organization and membership in any other organization were unequally distributed among educational groups (Rojas & Carlson, 2006).

Ahnquist et al.’s (2012) Swedish study examined the independent associations and interactions of lack of economic capital (economic hardships) and various dimensions of social capital and self-rated health, psychological distress, and musculoskeletal disorders. The findings indicate that economic hardships and the cognitive aspects of social capital - low interpersonal (horizontal) trust and low political/institutional (vertical) trust in parliament- were independently associated with women’s and men’s health for all health outcomes (Ahnquist (2012). The study also found an interaction effect between economic hardships and low social capital (all variables) combined both for women and for men (Ahnquist et al., 2012). When combined, economic hardships and low social capital were associated with a higher risk of poor health than when each was considered alone (Ahnquist et al., 2012).

The Chinese study by Sun et al. (2009) examined how poverty and social capital were associated with self-rated health. After controlling for gender, age, ethnicity, marital status, education level, and residence district, the poor were more likely than the non-poor to belong to
the low individual-level social capital group in each of the five dimensions studied (Sun et al., 2009). This finding suggests that lack of social capital is closely associated with poverty (Sun et al., 2009). For the total sample, high individual-level perception of reciprocity and social support was significantly associated with a lower probability of poor self-rated health (Sun et al., 2009). For the non-poor sub-sample, none of the social capital variables were significant predictors of poor self-rated health (Sun et al., 2009). There was also a significant interaction between low individual-level perception of reciprocity and social support and poverty, indicating that their combined effect exacerbates self-rated health (Sun et al., 2009).

In summary, all the studies found that socioeconomic factors and social capital were independently associated with health with one study finding that social capital mediated the effects of socioeconomic factors on health, while the remainder finding moderating effects on health. Several studies found that the effects of socioeconomic factors were stronger than the effects of social capital on health (Boyas, 2010; Sun et al., 2009). In contrast, Rose (2000) found that the effects of social capital on physical and emotional health were stronger than the effects of socioeconomic factors. Moreover, a number of studies found that the combined effects of socioeconomic factors and social capital were stronger than their independent effects on health (Ahnquist et al., 2012; Rose, 2000; Sun et al., 2009). Variations were also found in the effects of socioeconomic factors and social capital on health by race/ethnicity, type of social capital (cognitive versus structural or organizational types), and socioeconomic indicator (education versus income) (Boyas, 2010; Rojas & Carlson, 2006; Sun et al., 2009).

**Explanations: Relationship among social capital, health, HIV/AIDS.** Social capital is hypothesized to affect health in a number of ways. At the individual-level, participation in social
networks characterized by mutual trust and reciprocity may affect health by shaping behavioral norms, controlling risk behaviors, providing mutual aid and support, facilitating informal information exchange, and more rapid and widespread diffusion of information, which in turn may promote healthier behaviors and control unhealthy behaviors (Cullen & Whiteford, 2001; Islam et al., 2006). In the case of HIV/AIDS, well-functioning social networks and the social and material resources that flow between them may provide channels for information exchange about HIV risks and protective behaviors; exert social and cultural pressures that deter high risk sexual behaviors among its members; shape positive norms regarding gender relations as well as sexual communication and negotiation; and provide role modelling for health promotive behavior such as condom use (Pronyk et al., 2008). Moreover, individuals in wider networks characterized by trusting relationships may have a stronger sense of self-confidence, self-esteem, and self-efficacy, which may in turn, facilitate their engagement in health protective sexual behaviors (Campbell et al., 2002; Pronyk et al 2008).

However, different types of social capital may provide different kinds of resources, support, influence, and obligations, and hence, have disparate consequences for health (Ferlander, 2007). For example, some forms of social capital may actually facilitate individuals’ participation in HIV-related risk behaviors (e.g., casual sex, unprotected sex, alcohol consumption), and thereby increase HIV prevalence or incidence (Campbell et al., 2002; Pronyk et al., 2008). Bonding social capital may affect health through psychosocial processes. Homogeneous networks of family members and friends, characterized by close ties, can provide emotional or instrumental support and affect health by reducing stress and providing individuals with a sense of personal control (Ferlander, 2007). The emotional support provided through such
networks may serve to reduce HIV discrimination and to create a more accepting environment for those living with HIV disease (Pronyk et al., 2008).

However, family members and friends can also place greater emotional demands on individuals and excessively burden those who actually provide emotional or instrumental support to others (Ferlander, 2007). Because women are more likely than men to provide emotional support to others, they may be particularly vulnerable to the negative effects of bonding social capital. (Ferlander, 2007). Bonding social capital may also adversely affect health because social networks characterized by close ties exert a high level of social influence that may promote health damaging norms and limit the amount of new information available to members from external sources (Ferlander, 2007). In relation to HIV/AIDS, bonding social capital may serve to enforce negative gender norms (e.g., male dominance/female submissiveness, sexual risk-taking, violence against women) that adversely affect sexual communication and negotiation and thereby increase vulnerability to HIV infection (Pronyk et al., 2008).

Since individuals meet their sexual partners through their social networks, social capital may facilitate HIV transmission through sexual networks (groups of people linked directly or indirectly through sexual contact). The degree to which HIV infection is transmitted through sexual networks is affected by factors such as the size, density, and connectivity of the network as well as the dynamics of partnership formation, dissolution, and temporal ordering, sexual mixing patterns by demographic and behavioral attributes, and geographic clustering and access within the network (Adimora et al., 2002; Morris & Kretzschmar, 1995). Theoretically concurrent sexual partnerships (i.e., having multiple sexual partners who overlap in the same time interval) facilitate more rapid spread of HIV infection through a sexual network than do
sequential monogamous partnerships, (Adimora et al., 2002; Adimora & Schoenbach, 2005; Morris & Kretzschmar, 1995; Morris, Kurth, Hamilton, Moody, & Wakefield, 2009).

Sexual partner concurrency is hypothesized to facilitate more rapid spread of HIV infection within a population in a number of ways. Sexual transmission of HIV requires that a person with the infection have sex with a susceptible person during the finite period of infectiousness which is highest shortly after acquiring HIV and is reduced over time and as a result of antiretroviral therapy (Aral, 2010). Partner concurrency decreases the time between sexual contacts with different partners and therefore reduces the window period between the acquisition of infection and transmission to other partners (Aral, 2010; Boily, Alary, & Baggaley, 2012). Partner concurrency also removes the protective effects of serial monogamy (i.e., that the earlier partners of an individual cannot be exposed to infection acquired by that individual from later partners), and it allows an individual to infect earlier partners through infection he or she acquired from a later partner (Aral, 2010; Boily et al., 2012). Moreover, partner concurrency links individuals in dense clusters, creating larger connected components in a network than serial monogamy, and thus, facilitates rapid transmission of infection (Aral, 2010; Boily et al., 2012).

The evidence on the role of concurrent sexual partnerships in increasing the rate of spread HIV infection at the population level is mixed. However, some researchers have suggested that lower marriage rates, higher rates of concurrent sexual relationships, and assortative mixing (bias in favor of connections with partners with similar characteristics) by race among African Americans may explain the disproportionately high rates of heterosexually transmitted HIV infection in this population (Adimora et al., 2002; Adimora & Schoenbach, 2005; Boily et al., 2012; Morris et al., 2009).
On the aggregate level, diffusion of information, which in turn may promote healthier behaviors and control unhealthy behaviors, may be faster and more widespread in communities or societies characterized by high levels of trust (Ferlander, 2007). Social capital may also affect health by facilitating the formation of groups to advocate for and ensure access to services and amenities conducive to good health such as transportation, nutrition and food security, health education programs, community health clinics, hospitals, and recreational facilities (Cullen & Whiteford, 2001). In regard to HIV/AIDS, social capital may facilitate mobilization of individuals to take effective collective action to address the epidemic within their communities (Pronyk et al., 2008).

Bridging social capital networks, characterized by weak ties and heterogeneous membership may have a positive influence on health by providing more of the right types of contacts for various purposes and access to new information and resources (Ferlander, 2007). Bridging social capital may also enhance individuals’ sense of control and improve their ability to solve a variety of problems (Ferlander, 2007). This form of social capital may provide individuals with opportunities to participate in heterogeneous groups, open channels of communication among people of diverse backgrounds, facilitate their mobilization, and provide a mechanism to voice the concerns of those who have less access to more formal means to influence change in policies that affect their health and welfare (e.g., budget cuts) (Ferlander, 2007; Islam et al., 2006). Thus, bridging social capital may give less socially advantaged groups access to material resources through connections to more socially advantaged groups (Islam et al., 2006).
Moreover, communities with strong linking social capital may influence social and health policies beneficial to health through their access to individuals and groups with greater power (Ferlander, 2007). However, strong vertical ties may also have negative effects on health such as creating exclusionary environments and imposing norms and rules that restrict the personal freedom of individuals at the lower end of the power structure (Ferlander, 2007; Islam et al., 2006).

**HIV Sexual Risk Behavior**

In the United States, most women are infected with HIV during unprotected (without a latex condom) sexual intercourse with a man with HIV infection (CDC, 2013a). Studies have shown that the transmission of HIV during heterosexual intercourse is two to eight times more efficient from a man to a woman than from a woman to a man (Nicolosi, et al., 1994; Padian, Shiboski, & Jewell, 1991; Padian, Shiboski, Glass, & Vittinghoff, 1997). The risk of exposure through sexual intercourse varies by type of sex with anal intercourse presenting the highest risk, followed by vaginal intercourse, and oral intercourse presenting the lowest risk (National Institute of Allergy and Infectious Diseases [NIAID], 2001). Recent estimates indicate that the risk of exposure to HIV during receptive anal sex is 17 times (138 per 10,000 exposures) greater than the risk during receptive penile-vaginal sex (8 per 10,000 exposures) (Patel et al., 2014). In contrast, risk of exposure to HIV during receptive or insertive oral intercourse is relatively low (Patel et al., 2014). While both partners are at risk of infection during unprotected heterosexual anal intercourse, the woman as the receptive partner is at substantially higher risk because HIV-infected semen and pre-ejaculate contain high amounts of the virus (NIAID, 2001; Patel et al., 2014).
A number of factors increase the risk of contracting HIV infection during heterosexual intercourse. For example, having other STDs particularly those that cause ulcerations of the vaginal (e.g., genital herpes, syphilis, and chancroid) considerably increase a woman's risk of becoming infected with HIV (NIAID, 2001; Fleming & Wasserheit, 1999). The risk of transmission of HIV is also greater during the primary-stage (2-4 weeks after infection with HIV) and late-stage of infection (10-19 months before death), because the concentration of the virus in a person’s blood is higher during these periods (Hollingsworth, Anderson, & Fraser, 2008). Other factors include male condom use and treatment of the HIV-infected partner with antiretroviral drugs. Patel et al.’s (2014) estimates of per-act risk of HIV transmission during exposure through anal or vaginal intercourse showed that male condom use and the treatment of the HIV-infected partner with antiretroviral drugs independently contributed to substantial reductions in the estimated risk of infection but, when used together, they could reduce HIV transmission by up to 99.2% (Patel et al., 2014).

During heterosexual vaginal or anal intercourse, use of a male latex condom provides women with protection from exposure to HIV because it covers the penis and will contain pre-ejaculate and semen following ejaculation if the condom does not slip off or break (NIAID, 2001). Prospective studies have shown that consistent and correct use of male latex condoms during vaginal and anal sexual intercourse is highly effective in preventing transmission of HIV infection among heterosexual partners (de Vincenzi, 1994). The evidence indicates that male latex condoms, when used correctly and consistently, are 80-95% effective in reducing the risk of HIV infection (Holmes, Levine, & Weaver, 2004; NIAID, 2001; Pinkerton & Abramson, 1997; Weller & Davis-Beaty, 2002). Consistent condom use means using a male latex condom during...
every act of vaginal, anal, or oral sex from start to finish (CDC, n.d.). Using male latex condoms correctly prevents breakage, slippage, and leakage of seminal fluids or blood (CDC, n.d.).

Evidence: Condom use among women in the United States. Although correct and consistent use of male latex condoms during sexual (vaginal, anal, oral) intercourse can substantially reduce an individual’s risk of contracting or transmitting HIV infection, national surveys generally show that the proportion of men and women in the United States reporting condom use is relatively low (ranging from about 20%-30%), with women reporting lower rates of use than men (17.7%-26.9% and 19.9%-39.6%, respectively) (Anderson, Wilson, Doll, Jones, & Barker, 1999; Chandra, Billioux, Copen, & Sionean, 2012; Mosher, Chandra, & Jones, 2005; Reece, et al., 2010). Several studies employing national data have shown that the frequency of condom use among women during their most recent episodes of vaginal sex is relatively low (21%-26.9%) (Anderson et al., 1999; Chandra et al., 2012; Mosher et al., 2005; Reece et al., 2010). One national study reported that the proportion of women reporting anal sex during the past 12 months was low (12.7%) and the proportion reporting using condoms during this higher risk sexual activity was disturbingly low (13.2% during the past 10, and 10.8% during their most recent anal sex event) (Reece et al., 2010).

Another national study found that while condom use was more frequent among women reporting factors or behaviors placing them at high risk for HIV than among women overall, a substantial proportion of these women engaged in unprotected sex (Chandra et al., 2012). The proportion of condom use during the last episode of vaginal intercourse with a male partner was highest among those women who reported five or more male sexual partners in the past year (46.6%), followed by those who reported one or more HIV risk-related sexual behavior(s) in the
past year (39.9%) (Chandra et al., 2012). The frequency of condom use was lower among women reporting one or more HIV risk-related behaviors in the past year (e.g., sexual or drug use behaviors, STD treatment) and lower still among those reporting receiving STD treatment in the past year (33.4% and 30.2%, respectively) (Chandra et al., 2012).

Evidence: Condom use by race/ethnicity. The evidence indicates that condom use among women varies by race and ethnicity. Several national studies have found that African American women were more likely than Hispanic and White women to have used condoms during their last sexual encounter with a male partner (Chandra et al. 2012; Mosher et al., 2005). Reece et al., (2010) found that race/ethnicity predicted condom use among adult women during the last ten episodes of vaginal sex with Black women using condoms more consistently than White or Hispanic women. Moreover, Chandra et al. (2012) found that among high risk women condom use was higher for Blacks, compared to Hispanics, and Whites. For women reporting an STD in the past year, Black women (45%) were more likely to use condoms at last sex than were White women (21%) (Chandra et al., 2012). Furthermore, among women who reported any sexual risk behaviors within the past year, the proportion reporting condom use at the last episode of vaginal sex was higher for Black women (50%) than for Hispanic (37%) or White (34%) women (Chandra et al., 2012). Similarly, two national studies found that among those whose last sexual experience was within an ongoing sexual relationship, condom use was significantly higher among Blacks (Anderson, 2003; Anderson et al., 1999).

Local studies of African American women. While the evidence from national studies indicates that African American women are more likely to use condoms than Latina or White women, the results from studies using local samples are mixed. For example, one study in San
Francisco, CA, showed that White women were less likely than African American or Latina women to engage in unprotected sex and more likely to engage in consistent condom use during vaginal or anal intercourse with their male partners (Catania et al., 1992). In contrast, a study of low-income women in Miami, FL, found that a higher percentage of White women reported unprotected vaginal sex and a lower proportion of White women reported consistent condom use with a main partner than did Black or Hispanic women (Soler et al., 2000). When compared with White women, Black and Hispanic women were more likely to be consistent condom users than non-users ($ORs = 10.2$ and 18.9, respectively). Some local studies have also found that condom use and consistent condom use is higher among African American women when compared with Latinas (Moreno, El-Bassel, & Morrill, 2007; Soler et al., 2000; Villar-Loubet, Jones, Waldrop-Valverde, Brucantini, & Weiss, 2011).

While African American women tend to use condoms more frequently than Latinas, findings from local studies show that a relatively high proportion (ranging from 57% to 71%) of African American women engage in unprotected sex with their male partners (Jemmott, Jemmott, & O’Leary, 2007; Magnus et al., 2009; Raiford, DiClemente, & Wingood, 2009). There is also evidence indicating relatively low consistent condom use (ranging from 25% to 58%) among African American women (Crosby, et al., 2013; Jemmott et al., 2007; Raiford et al., 2009; Wingood & DiClemente, 1998a).

**Local studies of Latinas.** Local studies conducted among Latinas also have shown that a relatively high proportion (ranging from 64% to 80%) of the women engaged in unprotected sex with their male partners (Dixon et al., 2001; Flaskerud, Uman, Lara, Romero, & Taka, 1996; Newcomb, et al., 1998). In terms of anal sex, a study of high risk Puerto Rican women found
that while nearly one-quarter (24.7%) reported having had anal sex, about half reported they never used condoms with their primary partners during this higher risk activity (Dixon et al. 2001). Condom use during their last sexual encounter has also been found to be higher among U.S.-born Latinas (33.3%) than among their foreign-born counterparts (27.5%) (Fernandez-Esquer, Atkinson, Diamond, & Usecbe, 2004).

Various local studies have also shown that consistent condom use is relatively low among Latinas (ranging from 6.2% to 15%) (González-Guarda, Peragallo, Urrutia, Vasquez, & Mitrani, 2008; Peragallo et al., 2005; Pulerwitz, Amaro, DeJong, Gortmaker, & Rudd, 2002). Dixon et al. (2001) found that while nearly one-quarter of the women in their study reported having had anal sex, only one-third consistently used condoms with their primary partners during this higher risk activity. There is also some evidence that consistent condom use among Latinas varies by ethnicity. For example, a study using data from a national survey, found that Puerto Rican women were more likely than Mexican-American women (30% vs. 19.2%) to report their male partners used condoms all of the time when they had sex in the past 12 months (Zambrana et al., 2004). Another study found that Puerto Rican women were more likely to consistently use condoms with their main male partner than Dominican women (21% vs. 15%), but this difference fell slightly short of statistical significance (Moreno & El-Bassel, 2007).

Evidence: Condom use and age. Condom use among women also varies according to age, partner type, and relationship status. In general, younger women are more likely than older women to use condoms during sexual intercourse with their male partners. At the national level, a number of studies have shown that condom use was significantly higher among adolescents or among younger women than among older women (Anderson, 2003; Anderson et al., 1999;
Studies among African American women also have shown that condom use is generally more frequent among younger than older females (Corneille, Zyzniewski & Belgrave, 2008; Holmes et al., 2008; St. Lawrence et al., 1998; Wingood & DiClemente, 1998a). A similar age pattern has been found in studies among Latinas (Abel & Chambers, 2004; Newcomb et al., 1998; Zambrana et al., 2004).

**Evidence: Condom use and partner type.** The evidence also indicates that women are more likely to use condoms with casual partners than with steady partners. National studies have found that condom use at last sexual intercourse was significantly higher among women in casual relationships than among those in on-going relationships (i.e., 54.4% vs. 17.7% in 1996; 49.1% vs. 17.2% in 2000) (Anderson, 2003; Anderson et al., 1999). Evidence from local studies also indicate that women were more likely to use condoms during sex with other partners (60%) than with regular partners (33%) (Sikkema et al., 1996). Studies of African American women also indicate that they tend to use condoms more frequently during sex with their non-main or non-regular partners than with their main or regular partners (Duncan, 2011; Lauby, Smith, Stark, Person, & Adams, 2000). Among Latinas, various studies have found that consistent condom use is significantly higher during sex with non-primary partners than with primary partners (Dixon, Peters, & Saul, 2003; Fernandez-Esquer et al., 2004; Flaskerud et al., 1996; Marin & Marin, 1992).

**Evidence: Condom use and relationship status.** Relationship status has also been found to influence condom use among women. On a national level, one study showed that condom use at last sex was highest among never married/not cohabiting women and lowest among married women (41.6% vs. 13.4%) (Mosher et al., 2005). Another national study found that relationship
status was one of the significant predictors of condom use among adult women during the last 10 episodes of vaginal sex and the only predictor during the last 10 episodes of anal sex with partnered women reporting less consistent condom use than single women (Reece et al., 2010).

At the local level, one study of African American and Latina women found that being married was significantly associated with less condom use with a main partner, while another study of racially/ethnically diverse women found that those in more committed relationships (committed/married whether cohabiting or not) were significantly more likely to engage in unprotected sex (Ickovics et al.; 2002; Moreno et al., 2007)

Studies among African American women have also found a similar pattern with less condom use among women in exclusive relationships than those in fluid relationships or not in relationships; among women with main partners than those with casual partners; and among women in long-term relationships than those in short-term relationships (Corneille et al., 2008; St. Lawrence et al., 1998; Wingood & DiClemente, 1998a). Various local-level studies have shown that single Latinas were more likely to use condoms with their male partners than married or cohabiting Latinas (Abel & Chambers, 2004; Albarracin & Plambeck, 2010; Newcomb et al., 1998; Pulerwitz et al., 2002). Dixon et al. (2001) found that residing with a husband or boyfriend was one of the factors significantly associated with greater unprotected vaginal sex among Puerto Rican women. Another study found that single Puerto Rican women were significantly more likely to use condoms than their married and/or Dominican counterparts (Moreno & El-Bassel, 2007). Moreover, a study of Puerto Rican women revealed that longer relationships and higher levels of investment in the relationship were both associated with less condom use (Saul et al., 2000).
In summary, national studies as well as studies in a variety of localities throughout the United States indicate that, among women, overall condom use and consistent condom use during sex with a male partner are relatively low. Condom use varies by race/ethnicity with some studies showing that overall and consistent condom use are higher among White women than Black or Hispanic women, while others indicate that condom use is higher among Black than Hispanic women and lower still among White women. Among Latinas, some studies indicate greater condom use among Puerto Rican women than Mexican-American or Dominican women. In terms of age, younger women are more likely to report higher overall and consistent condom use than older women. Condom use among women is less frequent and more inconsistent with primary partners than with non-primary or casual partners. Condom use is also less frequent and more inconsistent among married or cohabiting women than single/unmarried women, among women in committed relationships or longer term relationships, and among those who are highly invested in their relationships than those who are not.

Chapter Summary

This chapter presented the social determinants of health conceptual framework applied in this study to examine the relationships and effects of two key social determinants; SES and social capital, on HIV sexual risk among African American and Latina women. Based on a review of the literature, SES is conceptualized as a structural determinant and social capital as an intermediary determinant of unprotected sex. SES and social capital are both hypothesized to have independent as well as interactive effects on unprotected sex.

Drawing on Weber’s multidimensional conceptualization of social stratification, SES is hypothesized to affect unprotected sex by shaping women’s opportunities to access the economic
and social resources that will determine their living conditions and access to health promoting information and services. For example, lower income women may have less access to material (e.g., income, property) and social resources (e.g., education) that will influence their living conditions and facilitate their access to health information and services. Women of lower educational status will lack the credentials, knowledge, and skills to access well-paying jobs that in turn will provide them with the income they need to adequately support themselves and their children or other family members. Lack of adequate income may lead women to depend on their male sexual partners for economic support. Economic dependency on their male sexual partners may decrease their power to negotiate condom use with their partners and may increase their risk of unprotected sex. Lower income women may also have less access to better quality education. In turn, lower educational attainment may affect women’s knowledge, skills, and cognitive abilities to access health services, to communicate effectively with health care providers, and to understand health information regarding HIV risks, including unprotected sex and the protective effects of consistent condom use.

Based on Bourdieu’s (1986) conceptualization of social capital as resources accrued by individuals as a result of their participation in social networks, it is hypothesized that women with lower social capital will be less likely to have access to the social and economic resources, including the health information as well as emotional and instrumental support which will enable them to avoid unprotected sex and engage in consistent condom use. Drawing on Coleman’s (1988; 1990) conceptualization of social capital, women with lower social capital will be less likely to be exposed to health promoting information and the norms and effective sanctions that will encourage them to avoid unprotected sex and engage in consistent condom use. Moreover,
Based on Bourdieu’s (1986) conceptualization, economic (i.e., income), cultural (i.e., education), and social capital are expected to be interrelated, and individual social capital is expected to be affected by the volume and quality of resources that each member of his or her network possesses. It is hypothesized that social capital and SES will interact, and this interaction will have a stronger effect on women’s ability to avoid unprotected sex and engage in consistent condom use than their independent effects.

Based on the review of the literature and the dominant consensus among social scientists, race and ethnicity in this study are viewed as social rather than biological constructs. It is expected that cognitive social capital will be higher among Latinas than African Americans and that structural social capital will be higher among African Americans than Latinas. It is also expected that there will be significant inverse and independent associations of cognitive and structural social capital with unprotected sex, stratified by race/ethnicity.

Demographic factors will also influence engagement in unprotected sex. Based on the findings of the literature review, it is hypothesized that older women will be more likely to engage in unprotected sex than younger women and that that married women will be more likely to engage in unprotected sex than single women. It is also hypothesized that Latinas will be more likely to be younger and to be married or cohabiting than African American women. The frequency of unprotected sex with main male partners will be higher among Latinas than African American women. It is also hypothesized that African American women will have higher educational attainment and higher income than Latinas and will be less likely to engage in unprotected sex than Latinas.
The next chapter describes the research design and methodology of the larger GEM study, the conceptualization and operationalization of the current study’s independent and dependent variables and covariates, and the data analysis plan.
Chapter 3: Methodology

The current study is a secondary analysis utilizing baseline cross-sectional data of a sub-sample of women from the Gender Economic Model of HIV Risk in African American and Latina Women Project (GEM) study. The sub-sample consists of 196 African American and 174 Latina women who reported having had vaginal sex with their main male partner in the six months prior to the interview. The GEM study was conducted by researchers at the Health Equity Initiative of San Francisco State University. This chapter describes the research design, sampling, and data collection procedures of the original study, as well as the current study’s research questions, hypotheses, and research design. In addition, this chapter includes a description of the conceptualization and operationalization of the dependent, independent, and control variables. This chapter also reviews issues related to the protection of human subjects and describes the data analysis plan for the current study.

Original Study

The GEM study was a five year longitudinal study funded by the National Institutes of Health (R01 HD041742), which examined the associations of socio-culturally prescribed sexual gender norms and socioeconomic context with sexual risk behaviors among African American and Latina women. The aims of the study were to identify, assess, and compare socio-culturally sanctioned sexual gender norms for African American and Latina women; identify the extent to which African-American and Latina women of differing socioeconomic contexts comply with such norms; and test a gender-economic model for understanding HIV risk in women by assessing how the intersection of sexual gender norms and socioeconomic context contributes to,
and predicts, sexual risk behaviors among African-American and Latina women. The study was conducted in the greater San Francisco metropolitan area.

**Research design.** The GEM study employed a longitudinal research design which was carried out in three phases. The first phase was designed to refine the theoretical constructs and included analysis of qualitative data obtained from focus groups conducted with women from mixed socioeconomic backgrounds in both English and Spanish; in-depth individual interviews to further examine sexual, social, and economic factors; pilot testing of the survey instrument ($n = 40$), and formation of a Community Advisory Board. The information garnered from the focus groups and in-depth individual interviews was used to develop and test a modified measure of sexual gender norms that can be used to assess similar and distinct aspects of this construct among African American and Latina women. Existing measures of socioeconomic context were refined and adapted based on the findings of the qualitative assessments. A draft of the English version of the survey instrument was pilot tested with a sample of 20 African American and 20 Latina women.

During the second phase of the GEM study, cross-sectional data were collected from a sample of 512 (272 African American and 240 Latina) women using the final version of the survey instrument. The survey instrument included questions regarding demographic characteristics, general health, substance use, housing, neighborhood, discrimination, social capital, financial hardship, social support, employment status and occupation, income and wealth, education, relationship status, gender roles, sexual behavior (with main, non-main, male and female partners), general sex and sexuality, peer norms and self-perception, sexual abuse, HIV knowledge, relationships (e.g., communication, decision-making, power). The data
collected were used to test the Gender-Economic Model which examines the intersection of
gender roles and socioeconomic context and its association with sexual risk behaviors.

The third phase of the GEM study was a prospective follow-up of the women
participating in the Phase II cross-sectional survey. Follow-ups were conducted at six-months,
12-months and 18-months in order to observe sexual risk behaviors associated with sexual
gender norms and socioeconomic contexts; assess changes in economic and social resources such
as income and assets; job standing, control, and strain; educational credentialing; partnership and
neighborhood environment; access to social capital/collective resources; and to validate and
refine retrospective assessments made in the cross-sectional survey.

Current Study

Purpose. The purpose of the study is to examine the effects of two key social
determinants of HIV infection on HIV-related sexual risk behaviors of African American and
Latina women. Specifically, the study will examine whether SES and social capital have
independent effects on the sexual risk behaviors of the women and whether the interaction of
these two independent variables has a stronger effect on their sexual risk behaviors.

Research questions. The study is designed to address the following research questions:

1) Are there differences between African American and Latina women in SES, social
capital, and HIV-related sexual risk behaviors?

2) Are SES and social capital independently associated with HIV-related sexual risk
behaviors among African American and Latina women?
3) Is there an interaction effect of SES and social capital that moderates the independent effects of each predictor on HIV-related sexual risk behaviors among African American and Latina women?

**Hypotheses.** Based on these three research questions the following hypotheses were developed:

**H₁:** Compared to Latinas, African American women will have higher SES, lower cognitive social capital, higher structural social capital, and higher frequency of unprotected sex.

**H₂:** Controlling for socio-demographic variables, SES, cognitive social capital, and structural social capital will each have significant inverse associations with HIV-related sexual risk behaviors among African American women and Latinas.

**H₃:** There will be a significant interaction of SES and cognitive social capital, and of SES and structural social capital such that the level of one variable will moderate the effect of the other variable on unprotected sex among African American women and Latinas.

**Sampling procedures.** The study included African American and Latina women who were 18 years of age or older, lived in the greater San Francisco metropolitan area, had at least one male sex partner in the previous 12 months, and were HIV-negative. HIV-positive women were excluded from the study since both their sexual risk patterns and socioeconomic contexts would be differentially impacted by their HIV status. African-American women were defined as those who self-identify as being African American, Black, or of African descent. Latina women were defined as women who self-identify as being Latina or Hispanic and include Mexican-American, Mexican, Central American, South American, Puerto Rican, Dominican, or Spanish.
Focus groups. During the first phase of the GEM study, a total of 94 African American and Latina women ages 18 years and older, of diverse socio-economic context, and who have sex with men, were recruited to participate in 11 focus groups using venue-based targeted sampling techniques (Watters & Biernacki, 1989) and respondent driven sampling (RDS) (Heckathorn, 1997).

Twenty-five women were selected from those who participated in the focus group interviews, agreed to be contacted for an individual interview, and to participate in the in-depth individual interviews based on the diverse perspectives they provided in the focus groups. The pilot test of the draft survey instrument was conducted with a sample of 20 African American and 20 Latina women. These women were recruited from local health clinics, shopping malls, social service/welfare offices, and college campuses in areas with high-density of African American and Latina women. When approached, the women were informed about the study and the purpose of their participation. The recruiter obtained verbal consent from those agreeing to participate to screen them for eligibility. The recruiter screened the women who agreed to participate, determined their eligibility, and provided eligible women with an appointment for the pilot test using hand-held wireless technologies that allowed for instant access to a screening database and a centralized appointment calendar. This technology was used in order to decrease attrition from recruitment to screening by providing an immediate appointment rather than the more traditional procedures of asking potential participants to call a study phone line to determine eligibility and schedule an appointment. In addition, screening was determined automatically by the programmed software. Recruiters had the option of either sending the
screening data electronically to the centralized screening database or downloading it at the end of the day.

**Original study sample.** The GEM study investigators expected to recruit a sample of 600 women (300 African Americans and 300 Latinas) for the Phase II and Phase III components of the investigation. They were actually able to recruit a total sample of 512 (272 African American and 240 Latina) women. Due to resource limitations, it was not feasible to enumerate, stratify, and randomly select African American and Latina women from the San Francisco metropolitan area. The GEM study investigators were interested in recruiting a sample of socio-economically diverse women and therefore designated very poor or very wealthy women as hard-to-reach populations. They employed venue-based targeted sampling and respondent-driven sampling, two different but complementary methods that have been shown to result in more representative samples of hard-to-reach populations (Watters & Biernacki, 1989; Heckathorn, 1997; Heckathorn, 2002).

**Venue-based targeted sampling.** Venue-based targeted sampling is a modified targeted sampling strategy. According to Watters and Biernacki (1989) targeted sampling is a strategy that combines aspects of street ethnography, theoretical sampling, stratified survey sampling, quota sampling, and chain referral sampling to obtain “… systematic information when true random sampling is not feasible and when convenience sampling is not rigorous enough to meet the assumptions of the research design” (p. 420). The investigators of the GEM study developed a targeted sampling strategy to recruit African-American and Latina women of diverse socioeconomic contexts by identifying potential recruitment sites (locations where these women might congregate and/or socialize) through information provided by the focus group participants.
and community advisory board members. The sites encompassed a range of geographic locations as well as types of venues. Ethnographic observations were made at selected locations to determine the approximate number of women regularly present at each site and to determine the average number of eligible persons per sampling period. A venue-specific sampling frame as well as a predetermined selection method was used at each site based on the characteristics and the estimated number of eligible women at that location. The investigators considered the resulting sample to be most representative of “socially active” African-American and Latina women living in the San Francisco metropolitan area.

Each person approached was given a choice to be screened, and if eligible, to be scheduled for their initial study appointment. Women who were not able or willing to be screened at that time were given a project business card that provided basic information regarding the study and the toll-free number to call for participation. Color coded project business cards were distributed for venue type to monitor the venue source during phone screening of potential participants. Women who contacted the GEM Project through the toll-free phone number received additional information regarding the nature of the study and were screened for eligibility (African-American or Latina, at least 18 years old, sexually active with a man in the past year, not known to be HIV+). Women who were eligible and interested in participating in the study were scheduled for their first study visit.

The same procedures described above for recruitment of the pilot test participants were used for the women who were willing to be screened at the time of recruitment for Phase II. The recruiter screened to determine eligibility and provided an appointment to eligible women using hand-held computers that allowed for instant access to a screening database and a centralized
appointment calendar. These hand-held devices had the same Computer-Assisted Self Interview (CASI) software used for the survey. A screener that was read to the potential participant and entered into the device by the recruiter. Based on the responses provided by the potential participant, the device notified the recruiter of the participant’s eligibility. Eligible women were then offered an appointment that was most convenient for them based on an active calendar that the recruiter accessed remotely through the hand-held device. The potential for human error was minimized because the programmed screening software automatically determined eligibility. Attrition was also reduced because the technology enabled recruiters to provide an immediate appointment to the women who agreed to participate. It also improved efficiency because staff had the option to electronically transfer screening data directly to the centralized screener database or download screening data at the end of their recruitment shift.

Recruitment and screening staff received extensive training in how to approach and engage potential participants. Strict guidelines regarding professional conduct were enforced during data collection. Recruitment staff worked in pairs to ensure their safety and adherence to the study protocol.

Respondent driven sampling. Respondent driven sampling (RDS) was also used in order to reach women who rarely or never frequent public venues. According to Heckathorn (1997), hard to reach or hidden populations are difficult to sample because “… no sampling frame exists, so the size and boundaries of the population are unknown and second, there exist strong privacy concerns” (p. 174). As in the case of individuals at risk of contracting HIV infection, membership in hidden or hard to reach populations may involve stigmatized behaviors which lead “… individuals to refuse to cooperate, or give unreliable answers to protect their privacy”
RDS, a variant of snowballing or chain-referral sampling, is the newest social network-based approach developed to sample hard-to-reach or hidden populations (Heckathorn, 1997; Magnani, Sabin, Saidel, & Heckathorn, 2005).

Chain referral or “snowball” sampling is a non-probability method which is most commonly used to reach hidden or hard-to-reach populations, generally in studies that concern sensitive or private matters (Biernacki & Waldorf, 1981; Magnani et al., 2005). The study sample produced through the snowball method is based on referrals made among people who share or know of others who have certain characteristics that are of interest to the research study (Biernacki & Waldorf, 1981, p. 141). Researchers employing the snowball method first recruit a number of members of the target population who agree to participate in the study and serve as respondents (Magnani et al, 2005). These initial respondents or “seeds” are then asked to help in recruiting other sample members by referring friends, acquaintances, or peers who have the same characteristics or engage in the same types of behaviors and providing the researchers with their names and contact information (Heckathorn, 1997; Magnani et al., 2005). The researchers, then contact the individuals referred by the seeds, and if they meet the study criteria and agree to participate, collect from them the desired data (Heckathorn, 1997; Magnani et al., 2005). They, in turn, are asked to provide the researchers with the names and contact information of friends, acquaintances, or peers who may meet the study criteria (Heckathorn, 1997; Magnani et al., 2005). The process continues in this manner for successive waves or cycles of recruitment until the desired sample size is obtained or new sample members are unable to provide information on potential recruits that differs from that previously provided by other sample members (Magnani
et al., 2005). According to Magnani et al. (2005), while the initial respondents or seeds are in theory randomly chosen, in actual practice they tend to be chosen through convenience sampling.

The snowballing or chain referral method provides access to hidden or hard-to-reach populations. However, this approach like other non-probability sampling methods has several disadvantages related to sampling bias. The sample obtained through this method may not be representative of the larger population from which the sample was drawn (Heckathorn, 1997; Magnani et al., 2005). The initial seeds strongly influence the composition of the sample since they tend to identify individuals they know well and those they refer tend to share similar characteristics, thus representing a small sub-group of the entire population (Heckathorn, 1997; Magnani et al., 2005). The snowball method also tends to be biased toward more cooperative subjects who agree to participate (Heckathorn, 1997; Magnani et al., 2005). Moreover, because referrals occur through network connections, those who are part of larger personal networks are more likely to be referred than those who are socially isolated (Heckathorn, 1997). Especially in populations where privacy is a strong concern, sampling bias may also result from “masking” whereby recruiters protect their friends or peers by not referring them (Heckathorn, 1997).

Several features of RDS overcome some of the disadvantages of snowball sampling (Heckathorn, 1997; Magnani et al., 2005). Like other chain referral methods, this approach is based on the assumption that the best way to recruit hard-to-reach or hidden populations is through their own peers (Heckathorn, 1997; Magnani et al., 2005). RDS reduces the barriers to recruitment of hidden or hard to reach populations and enables researchers to recruit more members of the target population because they do not need the names or contact information of the prospective study participants recruited by the initial set of respondents or seeds (Heckathorn,
The initial respondents or seeds are given a full explanation of the study and a set number of coupons with unique serial numbers to use to recruit eligible peers for the study (Magnani et al., 2005). They refer their peers to the study by giving them a coupon with a unique serial number (Magnani et al., 2005). If the peer is eligible and enrolls in the study, the seed may be eligible for a reward for their recruitment efforts (Magnani et al., 2005). Each respondent referred by the seed also receives a set number of coupons as do the respondents they refer (Magnani et al., 2005). This process continues over successive waves until the sample size is reached.

RDS is a voluntary process because the recruited individuals must present at the study site (Magnani et al., 2005). Moreover, unlike snowball sampling which only provides an incentive for participation, RDS provides a dual system of incentives: a primary incentive for being interviewed as well as a secondary incentive for recruiting others into the study (Heckathorn, 1997). It also uses a mix of material (monetary) and symbolic (the opportunity to help oneself and one’s peers) rewards which encourage each initial subject to produce chain-referral systems that yield a large number of recruits over the course of successive waves (Heckathorn, 1997).

Heckathorn (1997) demonstrated that RDS can reduce the biases of snowball or chain-referral sampling resulting from voluntarism and masking, and it provides a means to control the biases resulting from differences in the sizes of personal networks. Using an analysis drawing on Markov chains and the theory of biased networks, Heckathorn (1997) showed that RDS produces samples that are independent of the initial respondents from which sampling begins and approximate a representative sample of the population of interest after a certain number
(generally three to five) of waves of recruitment are completed. Consequently, it does not matter whether the initial sample is drawn randomly (Heckathorn, 1997).

The investigators of the GEM study used the information gathered from the focus group participants and community advisory board members, to identify distinct sub-communities of African-American and Latina women. Two women were recruited from each of these segments to participate in the study. Recruitment of these women was done through flyers, and active street recruitment. The initial set of women were then asked to recruit a maximum of three peers (i.e., other African-American or Latina women) into the study. The women were given three recruitment coupons (with Project 800-line to call) to give to their peers and offered a $20 incentive for each peer recruited. The allocation of incentive rewards were based on serial numbers located on the recruitment coupons, which are recorded prior to distribution to the “peer” recruiter and requested from the recruit at the time of screening. This process was repeated with new recruits.

Data collection procedures. The focus groups were conducted in conference rooms located in downtown San Francisco, which is very accessible by public transportation for East Bay, South Bay, and San Francisco residents. When the women arrived they were given further information about the study and asked to sign informed consents as well as permission for audio-taping. Groups lasted up to two hours and participants were provided with light refreshments. Focus group leaders were experienced in focus group techniques, eliciting information and maintaining the focus of the group discussions. Themes explored in the focus group centered on sexual gender norms for men and women; the role of economic and social resources in women's decisions regarding sexual risk; exchange and control over social and economic resources in
partnerships, households, and communities; the motivation women have to maintain relationships with men; and the role of HIV and STD prevention as a priority in their life. At the completion of each focus group, the women were given $30 for their participation.

Individual in-depth interviews were conducted in private offices at the same San Francisco location. Similar themes as those used in the focus group served as the interview guide with a stronger exploration of women’s personal experiences. These interviews provided women with the opportunity to discuss issues they felt more comfortable revealing individually rather than in the focus group and to provide additional insights that might have become salient for them after completion of the focus group experience. Interviews were audio-taped and women were given $40 for their participation.

Data collection for the pilot test of the survey instrument, the Phase II cross-sectional interview, and Phase III follow-up interviews was done using Audio Computer-Assisted Self Interview technology (A-CASI). The A-CASI system displays each survey question on a computer monitor while simultaneously playing an audio recording of the question through a headphone. Participants enter their responses to the survey questions directly on the computer. In order to accommodate differences in the women’s ability to use a computer or maneuver a mouse, the participants were given the option of using a touch screen instead of a keyboard. The A-CASI method is easy to use and is effective for participants with low literacy because participants are able to hear the survey questions, and response categories are read to them through the audio component. It also provides increased privacy because it is self-administered and has been shown to result in participants reporting higher rates of sensitive behavior (such as sexual and drug use behaviors) than in paper-and-pencil surveys (Des Jarlais et al., 1999;
In addition, the A-CASI electronic data files are immediately transferable to statistical software packages.

Survey items were written in English at a 4th grade reading level. A Spanish version of the survey was developed, and the measures which had not been previously used with Latina women or are not available in Spanish were developed using back translation methodology. The Spanish version was pilot tested with a sample of 20 Spanish-speaking Latina women. Although the Spanish version of the survey instrument was made available, none of the participants opted to use it. Trained bilingual staff ensured informed consent and instructed participants on the use of the A-CASI program prior to starting the survey. Reading and computer literacy were verified through the training component of the computer program, which required the ability to follow written instructions. Participants were also given pen and paper and asked to note any problems or concerns they experienced along the way. Surveys were administered in a private office. Staff members were located in an adjacent office and an intercom was available for participants to contact staff to ask questions or to notify them when they were done with the survey. Following the pilot test of the survey instrument, women participated in a debriefing session and were asked to comment about any issues regarding use of A-CASI, language and tone of audio recording, wording of items, sequence of items, appropriateness of content, and comfort responding to the actual items. Specific feedback was also solicited regarding the interpretation of items used to measure sexual gender norms and economic context. Information derived from the pilot test of the survey instrument was used to assess item interpretation, psychometric properties, comprehension levels, language use, and ease of administration. At the end of the interview, participants of the pilot test and Phase II cross-sectional interview were given $40 in
cash for their participation; those who participated in the Phase III 6- and 12-month follow-up interviews were given $50; and those who participated in 18-month follow-up interview were given $75. After the women completed the survey, A-CASI survey data were electronically transferred to the Statistical Package for Social Science (SPSS) program.

**Research design.** The current study uses a cross-sectional survey design to conduct a secondary analysis of the GEM study, Phase II baseline dataset. A cross-sectional study design examines the relationship between an outcome and other variables of interest at one point in time in a sample or “cross-section” of respondents selected to represent a particular population (Singleton & Straits, 2005, p. 228). As such, a cross-sectional study provides a “snapshot” of the particular group of respondents. The data included in the Phase II baseline dataset was collected in 2005.

**Sample.** Although the GEM study sample includes 512 women, the current study will utilize a subsample of 370 (196 African American and 174 Latina) women to conduct the data analyses. This subsample was selected because these 370 women responded to the question regarding the use of condoms during vaginal sex with a main male partner in the six months prior to the interview. Data for this question were missing for 142 women of the 512 in the total sample: 82 reported they had no main male partner in the 6 months prior to the interview; 23 reported they did not have vaginal sex; and 37 responded they did not know, declined to answer, or did not respond to the question.

**Study variables.** The following sections describe the dependent, independent, and control variables used in this study.
**Dependent variable.** The dependent variable for this study is HIV sexual risk behavior. HIV sexual risk behavior was conceptualized as having unprotected (without a condom) sex. The original study measured HIV sexual risk behavior through self-reported instances of unprotected sex (vaginal, anal, and oral sex) with male sex partners (main and non-main). For the purposes of this study HIV sexual risk behavior will be measured using a computed variable from the original study. This variable labelled proportion (%) of condom use during vaginal sex with main male partner in the past six months, was derived by dividing the number of times condoms were used when the woman had vaginal sex with her main male partner in the past six months by the number of times the woman had vaginal sex with her main male partner in the past six months.

In order to carry out the logistic regression analyses a dichotomous variable was created by recoding this variable so that the proportion of condom use less than 100% represents a value of 0 and 100% condom use represents a value of 1. Thus, less than 100% condom use during vaginal sex with the main male partner represents unprotected sex, while 100% condom use represents protected sex. The proportion of condom use during oral and anal sex with the main male partner and during vaginal, oral, and anal sex with non-main male partners was not examined because the amount of missing data for these variables was relatively high (ranging from 207 to 510 cases). Since there was less missing data (142 cases) for the variable measuring the proportion of condom use during vaginal sex with the main male partner in the six months prior to the interview, the 370 cases for which data were available for this measure were selected as the subsample to conduct the analyses of this study.
Independent variables. The independent or predictor variables for this study are race/ethnicity, socioeconomic status (SES), cognitive social capital, and structural social capital. According to the social determinants of health conceptual framework, an individual’s position in the socioeconomic hierarchy is determined by powerful structural forces (social, economic, political, and cultural) (Graham, 2004; Solar & Irwin, 2007). In turn, an individual’s location in the socioeconomic hierarchy is a powerful determinant of his or her access to particular health enhancing resources (i.e., education, employment opportunities, income, property, and political influence) and to the likelihood that he or she will be exposed to health damaging or health promoting material living and working conditions as well as psychosocial, behavioral, and physiological factors (Graham, 2004; Solar & Irwin, 2007). Thus, the connection between social stratification and health lies in the mechanisms (i.e., class, status) which determine the distribution of skills, knowledge, education, and material resources held by individuals that are important to their health (Lynch & Kaplan, 2000).

Race/ethnicity. Consistent with Weber’s (1963) stratification theory race/ethnicity are conceptualized as status groups which determine an individuals’ access to valued and scarce social and economic resources and hence their location in the socioeconomic hierarchy. Respondents in the GEM study were asked “Which do you feel BEST describes your racial/ethnic background? (Choose one): (1) Black/African American; (2) Latino/Hispanic; (3) White; (4) American Indian/Alaskan Native; (5) Asian; (6) Pacific Islander; (7) Mixed; (8) Other.” Most selected Black/African American or Latino/Hispanic. In this study, race/ethnicity will be operationalized by two independent variables: African Americans (coded as 1) and Latinas (coded as 0).
Socioeconomic status. Based on Weber’s (1963) stratification theory, SES is conceptualized as a multidimensional concept reflecting an individual’s position in the socioeconomic hierarchy resulting from the unequal distribution of social (i.e., education) and economic resources (i.e., income). In line with Weber’s (1963) conceptualization of “life chances,” many health researchers have used indicators such as education, income, employment status, and occupation to measure SES (Lynch & Kaplan, 2000). In this study, SES will be operationalized by two independent variables: educational attainment and income. Educational attainment. Educational attainment is conceptualized as a resource because exposure to formal education can provide women with the knowledge, skills, and enhanced cognitive functioning to enable them to be more receptive to and process HIV sexual-risk reduction information and messages; to access appropriate health services and resources such as HIV-testing and prevention education; and to communicate effectively with health providers (Adler & Newman, 2002; Galobardes et al., 2006; National Research Council, 2004). Indirectly, educational attainment can affect HIV sexual-risk by shaping women’s current and future occupational and employment opportunities as well as income (Adler & Newman, 2002; Dunkle, Wingood, Camp, & DiClemente, 2010; Galobardes et al., 2006). Moreover, as an indicator of achieved social status, educational attainment can affect HIV sexual-risk by enhancing women’s self-esteem (Galobardes et al., 2006; Krieger et al., 1997).

Educational attainment was determined by participants’ response to the following question: “What is the highest grade or year of school you’ve completed?” Respondents were given nine choices ranging from (1) “Never went to school” to (9) “Graduate Degree (Doctorate level)” and “Don’t know.” A computed variable was created to group the responses into the
following four categories: (1) Less than High School; (2) High School/G.E.D.; (3) Some College/Junior College; and (4) College Graduate (from a four-year college or university) and Higher (Some Graduate School, Graduate Degree- Masters Level, Graduate Degree-Doctorate Level).

*Income.* Income is viewed as a resource that can provide women with material goods and services that are health-enhancing such as better quality housing, healthier food and nutrition, health care services, and exercise and recreational facilities (Galobardes et al., 2006; Winkleby et al., 1992). Indirectly, higher income can enhance women’s self-esteem and social standing by providing access to material goods that are relevant to participation in society such as fashionable clothes, automobiles, and electronic devices (e.g., cell phones, computers) (Galobardes et al., 2006). Higher income can also indirectly affect health by providing access to better quality education (Adler & Newman, 2002). In regard to women’s HIV-sexual risk, there is some evidence that suggests that poor women are less likely to use condoms than their higher income counterparts, that women who are economically dependent on their male sexual partners are more likely to engage in unprotected sex, and that staying in an economically motivated relationship is associated with significantly less condom use and with other sexual risk behaviors (i.e., lifetime sexual concurrency, lifetime anal sex) (Bankole et al., 1999; Biello, Sipsma, Ickovics, & Kershaw, 2010; Dunkle et al., 2010).
Income was determined by participants’ responses to the following question “What was your total personal income for 2004?” This item referred to pre-tax personal income. The responses to this question were collapsed into four categories: (1) Less than $10,000; (2) $10,000 - $29,999; (3) $30,000 - $49,999; and (4) $50,000 and greater.

Social capital. In this study, social capital is conceptualized based on Bourdieu’s (1986), and Coleman’s (1988; 1990) formulations as resources accrued by individuals by virtue of their participation in social relations/networks. While individuals can benefit from social capital, it is not viewed as a property of individuals but rather as inhering in the structure of social relations (Coleman, 1988; 1990). Drawing on a model developed by Rostila (2011) and on Bourdieu’s (1986) and Coleman’s (1988; 1990) formulations of social capital, the components of social capital are social networks, social trust and norms of reciprocity, and social resources. The structural dimension of social capital (social relations/networks) is antecedent to the cognitive dimension of social capital (social trust and norms of reciprocity), which in turn lead to the generation of social resources (Rostila, 2011). Based on Bourdieu’s (1986) formulation, the resources individuals might accrue through their social relations will vary depending on the volume and quality of the resources possessed by each members of their social network(s). Consequently, the distribution of social capital among African American and Latina women will vary by level of SES.

The measures of social capital used in the GEM study questionnaire were drawn from two well-known social capital measurement tools: The 2000 Social Capital Community Benchmark Survey (SCCBS) questionnaire, designed by the Saguaro Seminar: Civic Engagement in America, a project of the John F. Kennedy School of Government at Harvard
University, led by Robert D. Putnam, and the World Bank’s *Integrated Questionnaire for the Measurement of Social Capital (SC-IQ)* (Grootaert, Narayan, Nyhan-Jones, & Woolcock, 2004; Saguaro Seminar, 2000). GEM study investigators selected and adapted specific items from these two surveys to include in the questionnaire. The 2000 SCCBS, the first to examine social capital across diverse U.S. communities, included a national sample of 3,000 respondents and representative samples in 40 communities nationwide (across 29 states) covering an additional 26,200 respondents (Saguaro Seminar, 2001; Subramanian, Daniel, & Kawachi, 2002). The survey which allows for measurement of social capital at both individual and aggregate levels, includes 11 dimensions of social capital: social trust, political participation, civic leadership and associational involvement, charitable giving and volunteering, faith-based engagement, informal social ties diversity of friendships and equality of civic engagement (Saguaro Seminar, 2001; Subramanian et al., 2002).

The World Bank’s SC-IQ was designed as a core set of survey questions on dimensions of social capital which could be included in larger national household surveys of poverty (Grootaert et al., 2004). Each item in the survey was drawn from previous survey work on social capital where its reliability, validity, and usefulness has been demonstrated (Grootaert et al., 2004). The survey was pretested in the field and can be used not only as part of larger national household surveys, but also to conduct poverty assessments and in the design, implementation, and evaluation of development projects and poverty reduction strategies (Grootaert et al., 2004). The SC-IQ measures social capital at the individual or household level and is organized into six broad areas: groups and networks, trust and solidarity, collective action and cooperation,
information and communication, social cohesion and inclusion, and empowerment and political action (Grootaert et al., 2004).

Structural social capital. In current study, the structural dimension of social capital was operationalized using a series of items from the GEM study questionnaire which relate to participation in activities capturing sociability (with friends), entertainment, civic participation, political participation, and communication (via phone, email, discussion) during the past year, past month, and past week as well as those that relate to the frequency of socializing with neighbors, membership in a church or other place of worship, and the frequency of religious service attendance. Exploratory factor analyses were conducted to reduce the set of variables related to past year, past month, and past week activities and to determine which of these variables cluster together, measuring some common underlying construct or factor (Mertler & Vannatta, 2005). All factor analyses were conducted using principal components analysis as the extraction technique and varimax as the rotation technique.

The first factor analysis was conducted on the item which asked respondents “Which, if any, of these things have you done in the past year? (Check all that apply).” The response categories included 12 activities that were related to political participation (direct and indirect), civic participation, and “Does not Apply” (see Appendix, Table A2 for a list of items with respective factor loadings). The second factor analysis was conducted on the item which asked respondents “Which of the following activities, did you do in the past month? (Check all that apply).” The 12 activities listed under this item included those related to donating and volunteering, informal socializing with friends, having dinner in a restaurant, attending cultural, and sports events, attending the movies, attending church social functions, and attending club or
civic organization meetings (see Appendix, Table A3 for a list of items with respective factor loadings). The third factor analysis was conducted on the item which asked respondents “Which, if any, of these things have you done in the past week? (Check all that apply).” The 14 activities listed under this item included discussing politics, informal socializing with friends, attending a club, disco or other place of entertainment, having dinner in a restaurant, going out to watch a sports event, watching a sports event on TV, going to church, seeing a movie, making a personal long distance call, reading a book, spending time on a hobby, writing a personal letter or e-mail, and receiving a personal letter or e-mail (see Appendix A, Table A4 for a list of items with respective factor loadings). The response categories for all three sets of variables were recoded so that each checked item equals 1, and each unchecked item and “Does not apply” equals 0.

Three other items were also included as indicators of the structural dimension of social capital. One item adapted from the SC-IQ measures frequency of socializing with neighbors: “In the past 6 months, how often do you get together with any of your neighbors that is, either visiting at each other's homes or going places together? Would you say…(Choose one)”. The response categories for this item ranged from (1) Four or more times a week to (6) Never. These were reverse coded so that “Four or more times a week” equals 6 and “Never” equals 1. The next two items, adapted from the SCCBS, addressed faith-based engagement. The first item asked respondents “Are you a member of a specific church or other place of worship?” The response categories for this item were recoded so that 1 equals Yes and 0 equals No, No religion or No response. The second item, asked respondents “How often do you usually attend religious services? Would you say…(Choose one).” The response categories for this item ranged from (1)
Nearly every day to (5) Never. These were reverse coded so that “Nearly every day” equals 5 and “Never” equals 1.

*Cognitive social capital.* The cognitive dimension of social capital was conceptualized as perceptions of trust (generalized and particularized), social cohesion, solidarity and support, and collective action and cooperation, which lead to the generation of social resources. Ten items were selected from the GEM study questionnaire to operationalize perceptions of generalized social trust, particularized trust, perceptions of social cohesion, solidarity and support, and collective action and cooperation. These items were adapted from the SC-IQ. The first item was used to measure generalized trust: “Generally speaking, would you say that most people can be trusted or that you can't be too careful in dealing with people? (Choose one): (1) People can be trusted, (2) You can't be too careful, Decline to answer or No response” were also included as response categories. For the descriptive statistics these response categories were recoded as (1) People can be trusted, (0) You can’t be too careful and Decline to answer or No response. To conduct the factor analysis and develop the scales these categories were reverse coded as follows: (5) People can be trusted, (3) Decline to answer or No response and (1) You can't be too careful.

Three items, adapted from the SC-IQ, were used to operationalize other aspects of trust in the context of the participant’s neighborhood. These items asked respondents “In general, how much do you agree or disagree with the following statements? Most people who live in this neighborhood can be trusted. (Choose one);” “In this neighborhood, one has to be alert or someone is likely to take advantage of you. (Choose one);” and “In this neighborhood, people generally do not trust each other in matters of lending and borrowing money. (Choose one).”
The response categories for these items ranged from (1) Agree strongly to (5) Disagree strongly and also included Decline to answer or No response. The response categories for the first item, “most people…can be trusted,” were reverse coded so that Agree Strongly equals 5, Disagree Strongly equals 1 and also included Decline to answer or No response equal 3.

One item, adapted from the SC-IQ, referring to the perception of social cohesion asked respondents: “How strong is the feeling of togetherness or closeness in your neighborhood? (Choose one).” The response categories ranged from (1) Very close to (5) Very distant and also included Decline to answer or No response. These were reverse coded so that Very close equals 5, Very distant equals 1, and Decline to answer or No response equal 3.

Three items, adapted from the SC-IQ, referred to perceptions of solidarity and support. The first, “Most people in this neighborhood are willing to help if you need it” included the same response categories as those for the three items related to trust described above and these categories were reversed coded in the same manner. The next two items were: “If a community project does not directly benefit you, but has benefits for many others in the neighborhood, would you contribute time to the project?” and “If a community project does not directly benefit you, but has benefits for many others in the neighborhood, would you contribute money to the project?” The response categories for these two items were: (1) Yes, (0) No, and also included Don’t know, Decline to answer, or No response. For the descriptive statistics these response categories were recoded as follows: (1) Yes, (0) No, Don’t know, Decline to answer, or No response. To conduct the factor analysis and develop the scales, these response categories were recoded as (5) Yes, (3) Don’t know, Decline to answer, or No response, and (1) No.
The last two item, also adapted from the SC-IQ, referring to collective action and cooperation asked respondents “Suppose something unfortunate happened to someone in your neighborhood, such as a serious illness, or the death of a parent. How likely is it that people in the neighborhood would get together to help them? (Choose one)” and “Suppose something unfortunate happened to you, such as a serious illness or some other short-term crisis. How likely is it that people in the neighborhood would get together to help you? (Choose one).” The response categories for these two items ranged from (1) Very likely to (5) Very Unlikely and also included Decline to answer or No response. These were reverse coded so that Very likely equals 5, Very unlikely equals 1, and Decline to answer or No response equal 3.

To reduce the number of variables related to different aspects of cognitive social capital to a more manageable set and determine if there are any underlying constructs or factors, these ten items were included in a factor analysis which used principal components analysis and varimax rotation techniques (see Appendix, Table A1 for the list of items with respective factor loadings).

**Control variables.** Age and relationship status, will be used as control variables.

**Age.** Respondents’ age will be measured by AGE1 a variable that was computed post data collection using the respondent’s response to the question “What is your date of birth?” and the baseline interview date. This variable was transformed to create five age categories: (1) 18-24, (2) 25-29, (3) 30-39, (4) 40-49, and (5) ≥ 50.

**Relationship status.** Relationship status will be measured by the item “What is your current relationship with main male partner? … (Check only one).” The response categories were (1) Legally married, (2) In a relationship and living together, (3) Dating (boyfriend-
girlfriend but not living together), (4) No longer in the relationship, (5) Other as well as No main male partner, Decline to answer, or No response. For the descriptive statistics these response categories were recoded as follows: (4) Legally married, (3) In relationship and living together, (2) Dating (boy-friend-girlfriend but not living together), (1) Other, No main male partner, Decline to answer, or No response. To conduct the logistic regression these response categories were recoded as (1) Legally married/In a relationship and living together, (0) All other categories (3-5, No main male partner, Decline to answer, or No response).

**Plan for data analysis.** Univariate analyses will be conducted to produce descriptive statistics (i.e., frequencies) to describe the sample. Bivariate analyses (i.e., correlations) will be conducted to describe the relationships among variables. Factor analyses and reliability analyses will be conducted to develop the structural social capital and cognitive social capital scales. Hypothesis 1: Compared to Latinas, African American women will have higher SES, lower cognitive social capital, higher structural social capital, and higher frequency of unprotected sex, will be tested using the chi-square statistic derived from cross-tabulations (for SES and unprotected sex) and independent samples t-tests (for the social capital scales). Logistic regression will be used to test Hypothesis 2: Controlling for socio-demographic variables, SES, cognitive social capital, and structural social capital will each have significant inverse associations with HIV-related sexual risk behaviors among African American women and Latinas. Hypothesis 3: There will be a significant interaction of SES and cognitive social capital, and of SES and structural social capital, such that the level of one variable will moderate the effect of the other variable on unprotected sex among African American women and Latinas, will
be tested using logistic regressions which include interaction terms for the SES and social capital variables.

All analyses will be conducted using the Statistical Package for the Social Sciences (SPSS) 11.5 for Windows (SPSS, 2000).

Protection of human subjects. Since this study analyzed secondary data, there were no significant human subject concerns. The GEM study baseline dataset made available by Dr. Cynthia Gómez, the principal investigator, had no personal identifying information, ensuring complete anonymity. The original study was approved by the Institutional Review Board (IRB) of the University of California, San Francisco. A second approval was obtained from the IRB of San Francisco State University. The IRB of The Catholic University of America exempted this study under 45 CFR 46.101(b) (4) from Institutional Review Approval.

Limitations of secondary data analysis. Secondary analysis of survey data has advantages as well as disadvantages. One of the major advantages of secondary data analysis is economic. Since the data has already been collected by someone else, albeit for another purpose, the investigator using the dataset saves the time and costs associated with the data collection process (Boslaugh, 2007). The use of secondary data also provides a larger number of participants than may otherwise be available to the investigator and provides opportunities to examine research questions not included in the primary study (Smith, 2008; Windle, 2010). Another major advantage is the scope of the data available, especially in national surveys as well as those that collect data longitudinally (Boslaugh, 2007). Moreover, the development of large surveys and the data collection process are typically guided by researchers with the technical
expertise and experience that is often not available in small local research projects (Boslaugh, 2007; Smith, 2008).

One of the major disadvantages of secondary data analysis is that the data has been collected for another purpose and may not contain the information needed to answer the investigator’s specific research questions. Other disadvantages are that the survey questions may not adequately capture the constructs of interest to the investigator or that the variables were defined or categorized differently from the way the investigator would have done so (Boslaugh, 2007). Moreover, not having participated in the data collection process, the investigator may be unaware of factors affecting the data such as the context in which the data was collected, low response rates, or misunderstanding of survey questions by the respondents (Boslaugh, 2007; Smith, 2008).

**Chapter Summary**

This chapter described the methodology employed in the study including the research design, sampling, and data collection procedures of the original study, as well as the current study’s research questions, hypotheses, sample, and research design. In addition, a description of the conceptualization and operationalization of the dependent, independent, and control variables was included. Issues related to the protection of human subjects were reviewed and the data analysis plan for the current study was described.

This study employs a cross-sectional survey design to conduct secondary data analysis of a sample of 370 African American and Latina women who participated in the GEM study. The purpose of the study is to examine the main and interaction effects of SES and social capital on unprotected sex among African American and Latina women. Univariate and bivariate statistical
analyses will be conducted to describe the sample and the relationships among the independent, control, and dependent variables. Cross-tabulations (chi-square statistic) will be used to assess differences in group means between African American and Latina women in age, relationship status, SES, and sexual risk behaviors. Independent samples $t$-tests will be utilized to analyze mean differences between African American and Latina women in social capital (cognitive and structural scales). Exploratory factor analyses will be conducted to reduce the social capital variables, identify underlying constructs/factors, and develop social capital scales. The internal consistency of the scales will be examined using Cronbach’s alpha. Logistic regression will be employed to examine the independent and interaction effects of SES and social capital on unprotected vaginal sex.

Chapter 4 which follows will describe and interpret the results of all analyses conducted and discuss whether the findings support the study’s hypotheses.
Chapter 4: Findings

This chapter presents the results of the statistical analyses conducted to describe the sample and test the hypotheses of this study. First, frequencies and cross-tabulations by race/ethnicity are presented to describe the distribution of African American and Latina women and to determine if there are significant differences between these two groups in demographic characteristics (i.e., age, relationship status with main male partner), SES (i.e., income, education) and selected structural social capital variables (i.e., frequency of getting together with neighbors, membership of a church or other place of worship, frequency of religious service attendance). Next, the results of the exploratory factor analysis used to reduce the number of cognitive and structural social capital variables are described as well as the results of the reliability analyses conducted to assess the internal consistency of the cognitive and social capital scales created. This is followed by a presentation of the results of the independent samples $t$-tests conducted to assess mean differences between African American and Latina women on the social capital scales (test of $H_2$). Next, the results of the five logistic regression models used to test the main effects of the demographic, SES, and social capital variables and the interaction effects of income with the social capital variables as well as the interactions of education with the social capital variables (test of $H_3$) are presented. Finally, the results of the reduced model (test of $H_3$), are described. The chapter then concludes with a summary of the findings.
Demographic Variables: Frequencies and Cross-tabulations

Frequency distributions were used to describe the sample by race/ethnicity in terms of demographic characteristics, SES, and selected social capital indicators. Cross-tabulations were used to determine if there were any significant differences between African American and Latina women on these indicators. Table 1 presents the findings regarding the demographic characteristics of the study sample. The sample consisted of 370 women of which 53% were African American and 47% were Latina. The women in the sample were relatively young; slightly more than two-fifths were between 18-29 years of age, and slightly more than one-fifth were between 30-39 years of age. Nearly a quarter were between the ages of 40 and 49 years and slightly over one-tenth were 50 years or older. The results of the chi-square analysis, used to test the degree of association between age and race/ethnicity, indicated a significant association ($\chi^2(4) = 14.716, p = .005$). The Cramer’s V statistic, which measures the degree of association between two nominal variables with two or more levels, indicated that this association, while significant, was relatively weak (V = .194, p = .000). Compared to African Americans, Latinas were 50% (OR= 1.5) more likely to be in 18-24 year old age group and 47% (OR=1.47) more likely to be in 25-29 year old age group. In contrast, African American women were 3.45 times more likely to be in the ≥50 year old age group, and 1.29 times more likely to be in the 40-49 year old age group, than were Latinas. The differences were less pronounced in the 30-39 year old age group, as Latinas were about 10% more likely than African American women to be in this age group. Hence, in this sample, Latinas tended to be more concentrated in the younger two age groups, while African American women tended to be more concentrated in the older two age groups.
In terms of their relationship with their main male partner, only one-fifth of the women were legally married, slightly less than one-fifth were living with their partner, over two-fifths were dating but not living with their partner, and nearly one-sixth were no longer in a relationship. Chi-square analysis indicated no significant differences in relationship with main male partner by race/ethnicity ($\chi^2(3) = 2.319, p = .509$).
Table 1

Frequency Distributions and Cross-tabulations: Demographic Characteristics by Race/Ethnicity

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>African</th>
<th>Latinas</th>
<th>Total</th>
<th>χ²</th>
<th>df</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Americans (n=196)</td>
<td>(n=174)</td>
<td>(N=370)</td>
<td>d.f.</td>
<td></td>
</tr>
<tr>
<td>Age in Years</td>
<td>n</td>
<td>%</td>
<td>n</td>
<td>%</td>
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</tr>
<tr>
<td>Relationship with Main Male Partner</td>
<td>2.319</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Legally married</td>
<td>34</td>
<td>17.3</td>
<td>40</td>
<td>23.0</td>
<td>74</td>
</tr>
<tr>
<td>In relationship and living together</td>
<td>40</td>
<td>20.4</td>
<td>31</td>
<td>17.8</td>
<td>71</td>
</tr>
<tr>
<td>Dating but not living together</td>
<td>91</td>
<td>46.4</td>
<td>73</td>
<td>42.0</td>
<td>164</td>
</tr>
<tr>
<td>No longer in relationship</td>
<td>31</td>
<td>15.8</td>
<td>30</td>
<td>17.2</td>
<td>61</td>
</tr>
</tbody>
</table>

Note. n = subgroup size; N = sample size; χ² = Chi-square, df = degrees of freedom; * = p ≤ .05.
**Socioeconomic Status Variables: Frequencies and Cross-tabulations**

Table 2 shows the distribution of the sample by SES and race/ethnicity. In terms of personal annual income, most (70%) of the women fell into the lower income brackets: 40% had incomes below $10,000 per annum, and 30% had incomes between $10,000 and $29,999 per annum. Slightly less than 18% of the women had annual incomes between $30,000 and $49,999, and only 12.2% had annual incomes of $50,000 or more. Chi-square analysis indicated that the association between income and race/ethnicity was significant ($\chi^2(3) = 11.532, p = .009$). However, strength of the association was relatively weak ($V = .177, p = .009$). African American women were 62% more likely ($OR = 1.62$) than Latinas to have incomes below $10,000 per annum. Compared to African American women, Latinas were 16% ($OR=1.16$) more likely to have incomes between $10,000 and $29,999 per annum. Moreover Latinas were more than two times ($OR = 2.28$) more likely to have incomes between $30,000 and $49,999 per annum than were African American women. However, African American women were 38% ($OR = 1.38$) more likely than Latinas to have incomes of $50,000 or more per annum. The results of this analysis only partially support H\textsubscript{1}, which posited that African American women would have higher SES than Latinas. Using annual income as an indicator of SES, this hypothesis was only supported for the highest income category, where more African American women than Latinas tended to be concentrated. However, more African American women than Latinas were also concentrated in the lowest income category, while more Latinas than African American women tended to be represented in the second lowest income category and in the middle income category.
The results for educational attainment showed that slightly more than one-tenth of the women had less than a high school education, while slightly less than one-quarter had completed high school or earned a general equivalency diploma (G.E.D.). Two-fifths of the women had completed some college credits or junior college and about one-quarter had completed four years of college or more. The association between education and race/ethnicity was marginally significant as indicated by the chi-square analysis ($\chi^2(3) = 7.643, p = .054$). The value of the Cramer’s V was $.144, p = .054$, indicating a weak association between these two variables. Latinas were 11% ($OR = 1.11$) more likely than African American women to have less than a high school education, but African American women were 36% ($OR = 1.36$) more likely than Latinas to have completed high school or earned a G.E.D. While African American women were 32% ($OR = 1.32$) more likely than Latinas to have completed some college or junior college, Latinas were 92% ($OR = 1.92$) more likely than African American women to have completed four years of college or more. These results only partially support $H_1$, which posited that African American women would have higher SES than Latinas. Using educational attainment as the second indicator of SES, the results show that while more Latinas than African Americans tended to be concentrated in the lowest level of education completed, more Latinas than African American women also fell within the highest level of educational attainment. African American women tended to be more concentrated in the middle levels of educational attainment.
Table 2

*Frequency Distributions and Cross-tabulations: Socioeconomic Status by Race/Ethnicity*

<table>
<thead>
<tr>
<th>Race/Ethnicity</th>
<th>African Americans</th>
<th>Latinas</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(n=196)</td>
<td>(n=174)</td>
<td>(N=370)</td>
</tr>
<tr>
<td>Indicator</td>
<td>n</td>
<td>%</td>
<td>n</td>
</tr>
<tr>
<td>Personal Income 2004</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; $10,000</td>
<td>89</td>
<td>45.4</td>
<td>59</td>
</tr>
<tr>
<td>$10,000-$29,999</td>
<td>56</td>
<td>28.6</td>
<td>55</td>
</tr>
<tr>
<td>$30,000-49,999</td>
<td>24</td>
<td>12.2</td>
<td>42</td>
</tr>
<tr>
<td>≥ $50,000</td>
<td>27</td>
<td>13.8</td>
<td>18</td>
</tr>
<tr>
<td>Highest Grade Completed</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; High</td>
<td>23</td>
<td>11.7</td>
<td>20</td>
</tr>
<tr>
<td>High</td>
<td>50</td>
<td>25.5</td>
<td>35</td>
</tr>
<tr>
<td>School/GED</td>
<td>85</td>
<td>43.4</td>
<td>64</td>
</tr>
<tr>
<td>Some College/Junior College</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>≥ Four Year</td>
<td>38</td>
<td>19.4</td>
<td>55</td>
</tr>
</tbody>
</table>

*Note. n = subgroup size; N = sample size; \(X^2\) = Chi-square, df = degrees of freedom; * = \(p \leq .05\).*
Table 3 presents the frequency distributions and cross-tabulations by race/ethnicity for two indicators of religious engagement and one indicator of socializing with neighbors. The findings for the first indicator of religious engagement showed that only 37.6% of the women in this sample were members of a church or other place of worship. The association of member of a church or other place of worship with race/ethnicity was significant as indicated by the chi-square analysis ($\chi^2(1) = 13.952, p = .000$) but relatively weak as indicated by the phi coefficient ($\Phi = .194, p = .000$) which measures the degree of association between two categorical variables with two levels each. African American women were 22% ($OR = 1.22$) more likely to be a member of a church or place of worship than were Latinas.

The findings regarding the second religious engagement indicator, frequency of religious service attendance, showed that 24.3% of the women in this sample never attended religious services, 30.8% attended a few times a year, 20.3% attended a few times a month, 22.4% attended at least once a week, and 2.2% attended nearly every day. The chi-square analysis indicated that the association between frequency of religious service attendance and race/ethnicity was significant ($\chi^2(4) = 11.084, p = .026$) but relatively weak ($\Phi = .173, p = .026$). Compared to Latinas, African American women were more than two times ($OR = 2.18$) as likely to attend religious services at least once a week and 1.49 times more likely to attend services nearly every day. In contrast, Latinas were 67% ($OR = 1.67$) more likely to report they never attended religious services than African American women.

As seen in Table 3, the results show that most (58.9%) of the women reported they never got together with their neighbors, while the proportion of women reporting they got together
with their neighbors varied by the frequency of their contacts. Slightly more than one-tenth (11.1%) reported getting together with neighbors a few times a year, while slightly less than one-tenth (9.2%) reported doing so at least once a month. About one-fifth of the women reported getting together with neighbors more frequently (4.9% - two to three times a month, 12.4% - three times a week, 3.5% - four or more times a week). The results of the chi-square analysis indicated there were no significant differences in frequency of getting together with neighbors between the African American and the Latina women ($\chi^2(5) = 5.390, p = .370$).
Table 3

*Frequency Distributions and Cross-tabulations: Selected Social Capital Indicators by Race/Ethnicity*

<table>
<thead>
<tr>
<th>Indicator</th>
<th>African Americans (n=196)</th>
<th>Latinas (n=174)</th>
<th>Total (N=370)</th>
<th>$\chi^2$</th>
<th>df</th>
</tr>
</thead>
<tbody>
<tr>
<td>Member of Church or Other Place of Worship</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>91 (46.4)</td>
<td>48 (27.6)</td>
<td>139 (37.6)</td>
<td>13.952*</td>
<td>1</td>
</tr>
<tr>
<td>No</td>
<td>105 (53.6)</td>
<td>126 (72.4)</td>
<td>231 (62.4)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Frequency of Religious Services Attendance</td>
<td></td>
<td></td>
<td></td>
<td>11.084*</td>
<td>4</td>
</tr>
<tr>
<td>Nearly everyday</td>
<td>5 (2.6)</td>
<td>3 (1.7)</td>
<td>8 (2.2)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>At least once a week</td>
<td>56 (28.6)</td>
<td>27 (15.5)</td>
<td>83 (22.4)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A few times a month</td>
<td>39 (19.9)</td>
<td>36 (20.7)</td>
<td>75 (20.3)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A few times a year</td>
<td>57 (29.1)</td>
<td>57 (32.8)</td>
<td>114 (30.8)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Never</td>
<td>39 (19.9)</td>
<td>51 (29.3)</td>
<td>90 (24.3)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Frequency of Getting Together with Neighbors</td>
<td></td>
<td></td>
<td></td>
<td>5.390</td>
<td>5</td>
</tr>
<tr>
<td>Never</td>
<td>109 (55.6)</td>
<td>109 (62.6)</td>
<td>218 (58.9)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A few times a year</td>
<td>20 (10.2)</td>
<td>21 (12.1)</td>
<td>41 (11.1)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>At least once a month</td>
<td>19 (9.7)</td>
<td>15 (8.6)</td>
<td>34 (9.2)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Two to three times a month</td>
<td>9 (4.6)</td>
<td>9 (5.2)</td>
<td>18 (4.9)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>One to three times a week</td>
<td>30 (15.3)</td>
<td>16 (9.2)</td>
<td>46 (12.4)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Four or more times a week</td>
<td>9 (4.6)</td>
<td>4 (2.3)</td>
<td>13 (3.5)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note. n = subgroup size; N = sample size; $\chi^2$ = Chi-square, df = degrees of freedom; * = p ≤ .05.*
Social Capital Scales: Principal Components Analysis and Reliability Analysis

A total of 48 items were selected from the GEM study questionnaire to measure the structural and cognitive dimensions of social capital. A series of exploratory factor analyses (EFA) were conducted to reduce the number of variables related to cognitive social capital (10), and structural social capital (past year – 12, past month – 12, past week – 14). Principal components analysis (PCA), which analyzes all sources of variability for each observed variable, was chosen as the method to determine (i.e., extract) the components or factors from the larger set of variables (Mertler & Vannatta, 2005). Varimax was selected as the rotation technique for the analyses. Varimax is an orthogonal rotation technique which maximizes the variance for each component (factor) and results in uncorrelated factors (Mertler & Vannatta, 2005). Two criteria were used to determine the components (factors) to retain. Following the Kaiser rule only those components which had eigenvalues (i.e., the amount of total variance explained by each factor) greater than 1 were retained. In addition, the scree plots were examined to retain all those components with large eigenvalues located on the sharp line of descent before the bend in the plot and the levelling off of successive components with smaller eigenvalues (Mertler & Vannatta, 2005). The factor loadings (correlation coefficients) in the varimax factor rotation matrix were examined to identify those variables (items) which accounted for a substantial amount of the variance in a component (factor). Variables with factor loadings of .40 or higher were considered to account for a substantial amount of the variance in a factor (i.e., \( .40^2 = 16\% \) of the variance) (Field, 2005; Meyers, Gamst, & Guarino, 2006).

Reliability analysis was used to assess the internal consistency or the degree to which the items making up a scale were correlated. Cronbach’s coefficient alpha (\( \alpha \)), the most widely used
measure of the internal consistency of a scale, is expressed as a number between 0 and 1
(Tavakol & Dennick, 2011). The acceptable level of the value of coefficient alpha varies
depending on how a scale is being used. While an alpha coefficient of .70 or greater is generally
considered an acceptable standard of scale reliability, for exploratory purposes, as in this study, a
coefficient alpha of .50 or greater is satisfactory. Table 4, presents the results of the reliability
analyses for the eight scales developed based on the four PCA conducted. It displays the scale
name, the number of items comprising it, as well as the mean ($\bar{x}$), standard deviation ($SD$), and
reliability score ($\alpha$) for each scale.

The first PCA conducted on the set of ten items selected to operationalize the cognitive
aspects of social capital (i.e., perceptions of trust, social cohesion, solidarity and support, and
collective action and cooperation) extracted three components with eigenvalues greater than 1
which accounted for 60.9% of the total variance. A review of the scree plot indicated that the
first two components were located along the sharp decline in the plot before it began to level off.
Moreover, only two items loaded onto the third component (If a community project does not
directly benefit you, but has benefits for many others in the neighborhood, would you contribute
time to the project? [factor loading - .81]; and If a community project does not directly benefit
you, but has benefits for many others in the neighborhood, would you contribute money to the
project? [factor loading - .795]). Summated into a scale these two components attained a
reliability score of $\alpha = .49$, indicating low internal consistency. These two items were eliminated
from the subsequent PCA conducted to explore a two component solution.

The two component solution accounted for 59.0% of the variance. Component 1
accounted for 37.6% of the variance before and 34.3% after rotation. Four items loaded onto
Component 1 with factor loadings ranging from .880 to .607 (See Table A1, Appendix). A summative scale labelled collective support was created from these four items and a reliability analysis was conducted which indicated relatively high internal consistency (α = .83). Component 2 accounted for 21.5% of the variance before rotation and 24.7% after rotation. Four items loaded onto this component with factor loading ranging from .752 to .535 (See Table A1, Appendix). A summative scale, labelled neighborhood trust, was created from these four items. Reliability analysis indicated an internal consistency (α = .60).

The next PCA was conducted on a set of 12 variables measuring structural dimensions of social capital (i.e., participation in civic and political activities in the past year). Three components with eigenvalues greater than 1 were extracted, accounting for 47.2% of the total variance. Component 1 accounted for 28.6% of the variance before and 20.6% after rotation. Five items with factor loading ranging from .710 to .571 loaded onto Component 1 (See Table A2, Appendix). These five items were used to create a summative scale, labelled past year civic participation, which obtained a reliability score of α = .68. Component 2 accounted for 9.4% of the variance before and 17.2% after rotation. Five items loaded onto Component 2 with factor loadings ranging from .688 to .432 (See Table A2, Appendix). These five items were included in a summative scale, labelled past year political participation, which attained a reliability score of α = .60. Component 3 accounted for 9.1% of the variance before and 9.4% after rotation. Two items loaded onto Component 3 with factor loadings of .776 and -.447 (See Table A2, Appendix A). A summative scale was created comprised of these two items, but it was discarded because it only attained a Cronbach’s alpha of -.02, indicating very poor internal consistency.
The next PCA was conducted on 12 items related to participation in social, entertainment civic, and sports-related activities during the past month. The analysis extracted three components with eigenvalues greater than 1 which accounted for 43.9% of the total variance. A review of the scree plot indicated that the first two components were located on the sharp descent of the plot before it levelled off. Another PCA was conducted to explore a two factor solution, which accounted for 42.3% of the total variance. Component 1 accounted for 26.8% of the variance before and 22.8% after rotation. Five items loaded onto Component 1 with factor loading ranging from .690 to .509 (See Table A3, Appendix). These five items were included in a summative scale labelled past month sociability, which obtained a reliability score of $\alpha = .65$. Component 2 accounted for 15.5% of the variance before and 19.6% after rotation. Four items loaded onto Component 2 with factor loading ranging from .681 to .589 (See, Table A3, Appendix). These four items were included in a summative scale labelled civic participation in past month which attained a reliability score of $\alpha = .54$.

The next PCA was conducted on 14 items of activities related to communication, socializing, entertainment, viewing sports events, hobby activities, and church attendance in the past week. This analysis resulted in extraction of four components with eigenvalues greater than 1 which accounted for 48.3% of the variance. However, the scree plot indicated that only the first two components were located in the sharp descent of the plot before it levelled off. Another PCA was conducted to explore a two component solution. The two components accounted for 44.3% of the total variance. Component 1 accounted for 31.9% of the variance before and 25.3% after rotation. Five items with factor loadings ranging from .752 to .573 loaded onto Component 1 (see Appendix, Table 4A). A summative scale labelled past week communications
was created with these five items which attained a reliability score of $\alpha = .71$, indicating good internal consistency. Component 2 accounted for 12.5% of the variance before and 19.1% after rotation. Four items loaded onto this component, with factor loadings ranging from .717 to .481. These four items were included in a summated scale labelled past week entertainment, which attained a reliability score of $\alpha = .52$.

As shown in Table 4, a total of eight scales were retained to measure the cognitive (2) and structural (6) dimensions of social capital in the subsequent analyses conducted. The scales which attained Cronbach’s alpha scores within the conventionally acceptable range for comparing groups were collective support ($\alpha = .83$) and past week communication ($\alpha = .71$). However, the other six scales were also retained because their coefficient alpha values ranged between $\alpha = .68$ and $\alpha = .52$, which are within acceptable levels for exploratory purposes. Moreover, these six scales include important measures of dimensions of social capital, such as trust, civic participation, and sociability that are included in other instruments commonly used to measure social capital (i.e., SCCBS, World Bank SC-IQ).
Table 4

Reliability Analyses: Results for Social Capital Scales

<table>
<thead>
<tr>
<th>Scale</th>
<th># of Items</th>
<th>$\bar{x}$</th>
<th>$SD$</th>
<th>Reliability ($\alpha$)*</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cognitive Social Capital</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Collective Support</td>
<td>4</td>
<td>12.61</td>
<td>3.99</td>
<td>.83</td>
</tr>
<tr>
<td>Neighborhood Trust</td>
<td>4</td>
<td>10.48</td>
<td>3.84</td>
<td>.60</td>
</tr>
<tr>
<td><strong>Structural Social Capital</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Past Year Civic Participation</td>
<td>5</td>
<td>0.65</td>
<td>1.09</td>
<td>.68</td>
</tr>
<tr>
<td>Past Year Political Participation</td>
<td>5</td>
<td>1.37</td>
<td>1.25</td>
<td>.60</td>
</tr>
<tr>
<td>Past Month Sociability</td>
<td>5</td>
<td>2.64</td>
<td>1.53</td>
<td>.65</td>
</tr>
<tr>
<td>Past Month Civic Participation</td>
<td>4</td>
<td>1.35</td>
<td>1.23</td>
<td>.54</td>
</tr>
<tr>
<td>Past Week Communication</td>
<td>5</td>
<td>2.48</td>
<td>1.69</td>
<td>.71</td>
</tr>
<tr>
<td>Past Week Entertainment</td>
<td>4</td>
<td>1.58</td>
<td>1.23</td>
<td>.52</td>
</tr>
</tbody>
</table>

*Note. $\bar{x}$ = group mean; $SD$ = standard deviation; * = Cronbach’s alpha ($\alpha$) values, rounded to two decimal points.*
Social Capital Scales: Independent Samples $t$-Test Analyses

Table 5 presents the results of the independent samples $t$-test analyses which were used to test the component of $H_1$ related to social capital: “Compared to Latinas, African American women will have…lower cognitive social capital, higher structural social capital,” using the eight social capital scales. Since the hypothesis predicted which group would have the highest mean, the one-tailed test significance value was calculated by dividing the two-tailed test significance value by two (Field, 2005). The results showed significant differences in group means for the two measures of cognitive social capital (collective support $t(368) = -4.26, p < .05$; neighborhood trust $t(368) = 2.85, p < .05$). The effect size for each of these variables was relatively low (collective support, $r = .22$; neighborhood trust, $r = .15$). The results only partially supported the hypothesis as African American women had lower mean neighborhood trust (2.49 vs. 2.77), but higher mean collective support (3.35 vs. 2.92) than Latinas.

In terms of the six measures of structural social capital, the means of the two groups were significantly different for past month sociability ($t(368) = 2.90, p < .05$), past week communication ($t(368) = 1.88, p < .05$), and past week entertainment ($t(368) = 4.52, p < .05$). However, the effect size for each of these variables was relatively small (past month sociability, $r = .15$; past week communication, $r = .10$; past week entertainment, $r = .23$). The hypothesis was not supported since African American had lower mean structural social capital than Latinas on measures of past month sociability (0.48 vs. 0.58), past week communication (0.47 vs. 0.53), and past week entertainment (0.33 vs. 0.47).
Table 5

Comparison of African American and Latina Women on Social Capital Scales Using t-tests

<table>
<thead>
<tr>
<th>Scale</th>
<th>African Americans</th>
<th>Latinas</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$\bar{x}$</td>
<td>$SD$</td>
<td>$\bar{x}$</td>
<td>$SD$</td>
<td>$t$</td>
<td>$df$</td>
</tr>
<tr>
<td>Collective Support</td>
<td>3.35</td>
<td>1.01</td>
<td>2.92</td>
<td>0.94</td>
<td>-4.26*</td>
<td>368</td>
</tr>
<tr>
<td>Neighborhood Trust</td>
<td>2.49</td>
<td>0.95</td>
<td>2.77</td>
<td>0.96</td>
<td>2.85*</td>
<td>368</td>
</tr>
<tr>
<td>Past Year Civic Participation</td>
<td>0.13</td>
<td>0.21</td>
<td>0.13</td>
<td>0.23</td>
<td>0.25</td>
<td>368</td>
</tr>
<tr>
<td>Past Year Political Participation</td>
<td>0.26</td>
<td>0.23</td>
<td>0.29</td>
<td>0.27</td>
<td>1.04</td>
<td>368</td>
</tr>
<tr>
<td>Past Month Sociability</td>
<td>0.48</td>
<td>0.30</td>
<td>0.58</td>
<td>0.30</td>
<td>2.90*</td>
<td>368</td>
</tr>
<tr>
<td>Past Month Civic Participation</td>
<td>1.42</td>
<td>1.26</td>
<td>1.26</td>
<td>1.19</td>
<td>-1.21</td>
<td>368</td>
</tr>
<tr>
<td>Past Week Communication</td>
<td>0.47</td>
<td>0.34</td>
<td>0.53</td>
<td>0.33</td>
<td>1.88*</td>
<td>368</td>
</tr>
<tr>
<td>Past Week Entertainment</td>
<td>0.33</td>
<td>0.28</td>
<td>0.47</td>
<td>0.32</td>
<td>4.52*</td>
<td>368</td>
</tr>
</tbody>
</table>

Note. $\bar{x}$ = group mean; $SD$ = standard deviation; $t$ = Student’s $t$ statistic; * = one-tailed significance value $p = \leq .05$; $df$ = degrees of freedom. The values of $\bar{x}$, $SD$, and $t$ were rounded to two decimal points.
Sexual Risk Behavior: Frequencies and Cross-tabulation

The findings regarding sexual risk behaviors by race/ethnicity are presented in Table 6. Regarding sex with partners other than their main male partner in the past six months, nearly 72% reported they had no non-main male sexual partners, while 28% reported they had sex with a male other than their main male partner during this time period. Of those reporting having had sex with a non-main male partner, about 12% reported having one non-main male partner, nearly 11% reported having two non-main male partners, and slightly more than 5% reported having three or more non-main male partners in the past six months. As indicated by the chi-square analysis there were no significant differences between African American women and Latinas in terms of the number of non-main male partners they had sex with in the past six months ($\chi^2(3) = .939, p = .816$). Most of the women reported they had no non-main male sexual partners during that time period.

Table 6 also shows the frequencies for condom use during sex (vaginal, oral, or anal) with their main male partner and for those reporting sex with one non-main male partner during the past six months. Overall, the percentage of women reporting they used condoms during sex (vaginal, 16.2%; oral, 4.6%; anal, 2.4%) with their main male partner was relatively low. Chi-square analyses indicated that the associations between condom use during sex with the main male partner and race/ethnicity were not significant: vaginal sex ($\chi^2(1) = 1.419, p = .233$); oral sex, $\chi^2(1) = 2.219, p = .136$; anal sex, $\chi^2(1) = .025, p = .875$).

Among those women who reported that they had one non-main male during the past six months, the percentage reporting they used condoms during sex with that partner was somewhat
higher for vaginal sex (23.9%) and oral sex (6.5%) but not for anal sex (0.0%). As shown by the chi-square analyses, no significant differences were found between African American women and Latinas in condom use during oral sex ($\chi^2(1) = 3.209, p = .073$). For anal sex the chi-square value could not be computed because neither African American nor Latina women reported condom use with their non-main male partner during anal sex. The association between condom use and race/ethnicity was only significant for vaginal sex with the non-main male partner ($\chi^2(1) = 5.855, p = .016$). The phi coefficient, used to measure the degree of association between two binary variable, indicates that the strength of this association is moderate ($\Phi = -.357, p = .016$).

Among those women who reported having one non-main male partner during the past six months, African American women were 85.2% less likely than Latinas to use condoms during vaginal sex with that partner ($OR = .148$).

The findings on sexual risk behavior indicate that African American and Latina women did not differ in terms of having non-main male partners as most did not have any non-main male sexual partners. Nor were there significant differences between African American women and Latinas in terms of condom use during vaginal, oral, or anal sex with their main male partner or during oral sex with their non-main male partner. However, there were significant differences by race/ethnicity among these women during vaginal sex with a non-main male partner, indicating that African American women were less likely than Latinas to use condoms. Although most women in this sample did not have multiple male sexual partners, they were at high risk of exposure to HIV infection because their use of condoms during sex with their main male partner was relatively low, and although higher with their non-main male partner, the frequency of protected sex with these partners was still relatively low.
Table 6

*Frequency Distribution and Cross-tabulations: Sexual Risk Behavior by Race/Ethnicity*

<table>
<thead>
<tr>
<th>Race/Ethnicity</th>
<th>African Americans</th>
<th>Latinas</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(n=196)</td>
<td>(n=174)</td>
<td>(N=370)</td>
</tr>
<tr>
<td>Indicator</td>
<td>n</td>
<td>%</td>
<td>n</td>
</tr>
<tr>
<td>Number of Non-Main Male Partner (s) Had Sex With</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>145</td>
<td>74.0</td>
<td>121</td>
</tr>
<tr>
<td>1</td>
<td>23</td>
<td>11.7</td>
<td>23</td>
</tr>
<tr>
<td>2</td>
<td>19</td>
<td>9.7</td>
<td>20</td>
</tr>
<tr>
<td>≥3</td>
<td>9</td>
<td>4.6</td>
<td>10</td>
</tr>
<tr>
<td>Used Condoms with Main Male Partner:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vaginal sex</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>36</td>
<td>18.4</td>
<td>24</td>
</tr>
<tr>
<td>No</td>
<td>160</td>
<td>81.6</td>
<td>150</td>
</tr>
<tr>
<td>Oral sex on partner</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>12</td>
<td>6.1</td>
<td>5</td>
</tr>
<tr>
<td>No</td>
<td>184</td>
<td>93.9</td>
<td>169</td>
</tr>
<tr>
<td>Anal sex</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>5</td>
<td>2.6</td>
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<td>170</td>
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<td>Used Condoms with Non-Main Male Partner-1:</td>
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<td>Vaginal sex</td>
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<tr>
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<td>Anal sex</td>
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</tr>
<tr>
<td>No</td>
<td>23</td>
<td>100.0</td>
<td>23</td>
</tr>
</tbody>
</table>

Note. n = subgroup size; N = sample size; \(\chi^2\) = Chi-square, df = degrees of freedom; * = \(p \leq .05\); aNo value.
Logistic Regression

Binary logistic regression analysis was used to test the following hypotheses:

H\textsubscript{2}: Controlling for socio-demographic variables, SES, cognitive social capital, and structural social capital will each have significant inverse associations with HIV-related sexual risk behaviors among African American women and Latinas.

H\textsubscript{3}: There will be a significant interaction of SES and cognitive social capital, and of SES and structural social capital, such that the level of one variable will moderate the effect of the other variable on unprotected sex among African American women and Latinas.

Logistic regression is a multivariate statistical method that is used when the dependent or outcome variable is categorical, with two or more values, and the independent or predictor variables are continuous and/or categorical (Field, 2005; Mertler & Vannatta, 2005; Meyers et al., 2006). Binary logistic regression was the analytic method used in this study because the dependent variable, HIV sexual risk behavior was operationalized as a dichotomous variable to assess condom use during vaginal sex with the woman’s main male partner in the past six months: less than 100% condom use during vaginal sex (coded as 0), representing unprotected sex and 100% condom use during vaginal sex (coded as one) representing protected sex.

The correlation matrix of all predictor variables was examined to identify any multicollinearity between predictor variables. None of the predictor variables were highly correlated (correlation coefficient of $\pm .70$ or above), indicating multicollinearity was not an issue. A series of logistic regressions were conducted entering demographic, SES, and social capital variables, and interactions of SES and social capital variables in sequential blocks to determine which of these variables or interaction terms best predicted whether the women in this
study used condoms every time they had vaginal sex with their main male partner. Statistical significance was determined at the $p = \leq .05$ level for these analyses. In the first model, demographic variables (age and relationship status with main male partner) were entered. The results of the logistic regression indicate that the two-predictor model provides a statistically significant improvement over the constant-only model in predicting condom use ($\chi^2 (2, N = 370) = 16.812, p = .000$). The model accounts for 7.6% of the variation in condom use (Nagelkerke $R^2 = .076$). However, the model’s goodness-of-fit is questionable as indicated by the large -2Log Likelihood (311.184) value. Moreover, the Hosmer-Lemeshow test indicates the data fits the model well as the observed and expected probabilities of condom use are not significantly different ($\chi^2 = 4.230(8), p = .836$). The model correctly classified 83.8% of the cases. Table 7.1 presents the $b$ coefficient weights and odds ratios ($OR$) for the first three models tested. Wald statistics indicate that both variables in Model 1 were significant predictors of consistent condom use. The results show that controlling for relationship status, for each one-unit increase in age there is a 1.27 greater likelihood that women will use condoms every time they have vaginal sex with their main male partner ($b = .240, SE = .110, Wald = 4.755, df = 1, p = .029, OR = 1.271$).

In terms of relationship status with main male partner, the findings indicate that, controlling for age, women who are married or living with their partner are 69% less likely to use condoms every time they have vaginal sex with their main male partner than women who are not married or living with their partner ($b = -1.174, SE = .346, Wald = 11.507, df = 1, p = .001, OR = .309$).

In the second model, two socioeconomic variables (income and education) were added to the demographic variables. The findings indicate that this four-predictor model was a statistically significant improvement in predicting condom use over the two-predictor model ($\chi^2$
(4, \(N = 370\)) = 19.923, \(p = .001\). The model accounts for 8.9% of the variation in condom use (Nagelkerke \(R^2 = .089\)). Although the -2Log Likelihood value was reduced slightly, it is still relatively large (-2LL = 308.073), indicating a poor fit. The results of the Hosmer-Lemeshow test indicate the data does not fit the model well as the observed and expected probabilities of condom use were significantly different (\(\chi^2 = 23.136(8), p = .003\)). There was no change in the percentage of cases correctly classified by this model from that of the previous model (83.8%).

As shown in Table 7.1, age remained a significant predictor of 100% condom use, slightly increasing in value \((b = .288, SE = .112, Wald = 6.579, df = 1, p = .010, OR = 1.334)\). Controlling for relationship status, income, and education, for each one-unit increase in age there is a 1.33 greater likelihood that women will use condoms every time they have vaginal sex with their main male partner. Relationship status also remained statistically significant, slightly increasing in value \((b = -1.152, SE = .348, Wald = 10.943, df = 1, p = .001, OR = .316)\). Holding age, income, and education constant, women who were married or living with her partner were 64% less likely to use condoms every time they have vaginal sex with their main male partner than women who were not married nor living with their partner. Income and education did not attain statistical significance.

In the third model, the social capital variables were added to the demographic and SES variables. The findings indicate that this fifteen-predictor model was a statistically significant improvement in predicting condom use over the four-predictor model \((\chi^2 (15, N = 370) = 31.782, p = .007)\). The model accounts for 14.0% of the variation in condom use (Nagelkerke \(R^2 = .140\)). Although the -2Log Likelihood value was reduced slightly, it is still relatively large (-2LL = 296.214), indicating a poor fit. The Hosmer-Lemeshow test result was not statistically
significant, indicating a good fit between the observed and expected probabilities of condom use ($\chi^2 = 13.405(8), p = .099$). The percentage of cases correctly classified by the model increased slightly from the previous model, to 84.1%. The data displayed in Table 7.1 for Model 3 indicate that relationship status and past month sociability were the only statistically significant predictors of 100% condom use. The effect of relationship status on consistent condom use was slightly reduced ($b = -1.186, SE = .353, Wald = 11.266, df = 1, p = .001, OR = .306$). Controlling for all other variables in the model, the findings indicate that women who were married or living with her partner were 69% less likely to use condoms every time they had vaginal sex with their main male partner than women who were not married nor living with their partner. The findings for past month sociability, an indicator of structural social capital, showed that controlling for all other variables in the model, for every one-unit increase in sociability, the likelihood of consistent condom use was reduced by a factor of .194 ($b = -1.638, SE = .712, Wald = 5.291, df = 1, p = .021, OR = .194$).
Table 7.1

Logistic Regression Analyses: Predictors of Protected Sex - Models One, Two, and Three

<table>
<thead>
<tr>
<th></th>
<th>Model 1</th>
<th>Model 2</th>
<th>Model 3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$B$</td>
<td>$OR$</td>
<td>$B$</td>
</tr>
<tr>
<td><strong>Demographic Variables</strong></td>
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<tr>
<td>Age</td>
<td>.240</td>
<td>1.271*</td>
<td>.288</td>
</tr>
<tr>
<td>Relationship Status</td>
<td>-1.174</td>
<td>.309*</td>
<td>-1.152</td>
</tr>
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<td><strong>Socioeconomic Variables</strong></td>
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<td>Income</td>
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<td>-.257</td>
</tr>
<tr>
<td>Education</td>
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<td><strong>Social Capital Variables</strong></td>
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<td>Get Together with Neighbors</td>
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<td>Religious Service Attendance</td>
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<td>PW Entertainment</td>
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<td><strong>Model Summary</strong></td>
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<tr>
<td>Constant</td>
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<td>-1.571*</td>
<td>-1.408</td>
</tr>
<tr>
<td>% of Cases Classified Correctly</td>
<td>83.8</td>
<td>83.8</td>
<td>84.1</td>
</tr>
<tr>
<td>Model $\chi^2$</td>
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<td>19.923*</td>
<td>31.782*</td>
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<tr>
<td>-2 Log Likelihood</td>
<td>311.184</td>
<td>308.073</td>
<td>296.214</td>
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<tr>
<td>Nagelkerke $R^2$</td>
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<td>.089</td>
<td>.140</td>
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<tr>
<td>Hosmer-Lemeshow $\chi^2$</td>
<td>4.230</td>
<td>23.136*</td>
<td>13.405</td>
</tr>
</tbody>
</table>

Note. $B =$ regression coefficient; $OR =$ odds ratio; $^* p \leq .05$; $\chi^2 =$ Chi-square; Nagelkerke $R^2 =$ pseudo $R^2$; PY = Past Year; PM = Past Month; PW = Past Week.
The findings for Model 4 and Model 5 are displayed in Table 7.2. The interaction terms between income and each of the eleven social capital variables were added to the demographic, SES, and social capital variables in the fourth model. The findings indicate that the twenty-six predictors in this model were a statistically significant improvement in predicting condom use over the fifteen-predictor model ($\chi^2 (26, N = 370) = 50.955, p = .002$). The model accounted for 21.9% of the variation in condom use ($\text{Nagelkerke } R^2 = .219$). The -2Log Likelihood value was reduced slightly but was still relatively large (-2LL = 277.041), indicating a poor fit. The Hosmer-Lemeshow test result was statistically significant, indicating a poor match between the observed and expected probabilities of condom use ($\chi^2 = 20.459(8), p = .009$). The percentage of cases correctly classified by the model did not change from that of the previous model (84.1%). Only three variables in this model achieved statistical significance. The findings showed a slight increase in the effect of relationship status on consistent condom use. Holding all other variables in the model constant, women who were married or living with their partner were 71% less likely to use condoms every time they had vaginal sex with their main male partner than women who were not married or living with their partner ($b = -1.241, SE = .374, Wald = 11.006, df = 1, p = .001, OR = .289$). Past month sociability remained statistically significant in this model, which showed that controlling for all other variables in the model, for every one-unit increase in sociability, the likelihood of consistent condom use was reduced by a factor of .019 ($b = -3.987, SE = 1.756, Wald = 5.152, df = 1, p = .023, OR = .019$). Only one interaction term, income*past year civic participation attained statistical significance. The findings indicated that when all other variables were held constant, each one-unit increase in income reduced the effect of past
year civic participation on consistent condom use during vaginal sex with the main male partner by a factor of .077 ($b = -2.558, SE = 1.278, Wald = 4.004, df = 1, p = .045, OR = .077$).

In Model 5, the interaction terms between education and each of the eleven social capital variables were added to the demographic, SES, social capital variables, and the interaction of income with each of the eleven social capital variables. This model, which included 37 predictors, was a statistically significant improvement in predicting condom use over the twenty-six predictor model ($\chi^2 (37, N = 370) = 60.817, p = .008$). The model accounted for 25.8% of the variation in condom use (Nagelkerke $R^2 = .258$). The -2Log Likelihood value was reduced slightly but was still relatively large (-2LL = 267.179), indicating a poor fit. The Hosmer-Lemeshow test result was not statistically significant, indicating a good fit between the observed and expected probabilities of condom use ($\chi^2 = 15.134(8), p = .057$). The percentage of cases correctly classified by the model increased slightly from that in the previous model to 85.1%.

In Model 5, only three predictors, relationship status, past month sociability, and the interaction of income with past month civic participation attained statistical significance at the $p = < .05$ level. There was a slight increase in the effect of relationship status on consistent condom use when all other variables in the model were held constant. Women who were married or living with their partner were 77% less likely to use condoms 100% of the time when having vaginal sex with their main male partner than women who were not married or living with their partner ($b = -1.456, SE = .412, Wald = 12.508, df = 1, p = .000, OR = .233$). The findings for past month sociability indicated that holding constant all other variables in the model, for every one-unit increase in sociability, the likelihood of consistent condom use was reduced by a factor of .000 ($b = -7.883, SE = 2.997, Wald = 6.920, df = 1, p = .009, OR = .000$). The results for the
interaction of income with past month civic participation indicate that controlling for all other variables in the model, for each one-unit increase in income, the effect of past month civic participation on consistent condom use was reduced by a factor of .621 ($b = -.476$, $SE = .209$, $Wald = 5.206$, $df = 1$, $p = .023$, $OR = .621$).
Table 7.2

Logistic Regression Analyses: Predictors of Protected Sex - Models Four and Five

<table>
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<tr>
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<th>Model 4</th>
<th></th>
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<td></td>
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<td>OR</td>
<td>B</td>
<td>OR</td>
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<tr>
<td><strong>Demographic Variables</strong></td>
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</tr>
<tr>
<td>Age</td>
<td>.223</td>
<td>1.250</td>
<td>.229</td>
<td>1.257**</td>
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<td>-1.456</td>
<td>.233*</td>
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<td><strong>Socioeconomic Variables</strong></td>
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<td><strong>Social Capital Variables</strong></td>
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</tr>
<tr>
<td>Get Together with Neighbors</td>
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<td>Member Church/Place of Worship</td>
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<td>2.425</td>
<td>11.305**</td>
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<td>.000*</td>
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<td>PW Entertainment</td>
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<td>1.983</td>
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<td><strong>Interactions Income and Social Capital</strong></td>
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<td>.077*</td>
<td>-2.197</td>
<td>.111**</td>
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Table 7.2

Logistic Regression Analyses: Predictors of Protected Sex - Models Four and Five - continued

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<td>Hosmer-Lemeshow $\chi^2$</td>
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<td>15.134**</td>
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Note. $B = \text{regression coefficient}; \ OR = \text{odds ratio}; *p \leq .05; ** \text{indicates predictors in Model 5 which attained significance at the } p \leq .10 \text{ level (these were included in the reduced model); } \chi^2 = \text{Chi-square; Nagelkerke } R^2 = \text{pseudo } R^2; \ PY = \text{Past Year; PM = Past Month; PW = Past Week.}$
The reduced model included all the predictors in Model 5 which were statistically significant at the $p = \leq .10$, level. Using this criterion, age ($p = .096$), relationship status ($p = .000$), member of a church or other place of worship ($p = .057$), past year civic participation ($p = .072$), past month sociability ($p = .009$), income*past year civic participation ($p = .094$), income*past month civic participation ($p = .023$) education*past month sociability ($p = .104$), and education*past month civic participation ($p = .073$) were included in the reduced model. Since the interaction terms included income, education, and past month civic participation, these predictors were also included in the reduced model to assess their main effects. The variables in the reduced model were entered in two steps. The constant-only model, classified 83.8% of the cases correctly, and was statistically significant in predicting condom use ($b = -1.642$, $SE = .141$, $Wald = 135.574$, $df = 1$, $p = .000$, $OR = .194$). The overall model chi-square statistic indicated this model was a significant improvement over the constant-only model in predicting condom use ($\chi^2 (8, N = 370) = 27.113$, $p = .001$). The model accounted for 12.0% of the variation in condom use (Nagelkerke $R^2 = .120$). The -2Log Likelihood value was relatively large (-2LL = 300.883), indicating a poor fit. The Hosmer-Lemeshow test result was not statistically significant, indicating a good fit between the observed and expected probabilities of condom use ($\chi^2 = 6.388(8), p = .604$). The percentage of cases correctly classified by the model increased slightly from that in the constant-only model, to 84.3%. Only three predictors were significant at the $\leq .10$ level (age, $p = .089$; relationship status, $p = .001$; and past month sociability, $p = .055$). The findings indicated that as age increased, the likelihood of using condoms 100% of the time during vaginal sex with their main male partner increased by a factor of 1.227 ($OR = 1.227$). Married women and those living with their partner were 69% less likely to use condoms every
time they had vaginal sex with their main male partner than were women who were not married or living with their partner. Moreover, for every unit increase in past month sociability, the likelihood of women using condoms 100% of the time during vaginal sex with their main male partner decreased by a factor of .347 ($OR = .347$).

In the second step of the reduced model the four interaction terms were added to the demographic, SES, and social capital variables. Adding these four interaction terms significantly improved the prediction of condom use ($\chi^2 (12, N = 370) = 43.905, p = .000$). The model accounted for 19.0% of the variation in condom use ($Nagelkerke R^2 = .190$). The $-2$Log Likelihood value was reduced ($-2LL = 284.091$) but remained relatively large, indicating a poor fit. The Hosmer-Lemeshow test result was not statistically significant, indicating a good fit between the observed and expected probabilities of condom use ($\chi^2 = 5.716(8), p = .679$). The percentage of cases correctly classified by the model increased slightly from the first step to 85.1%. Seven of the twelve predictors attained statistical significance. Age remained significant and its effect on condom use increased slightly ($b = .251, SE = .124, Wald = 4.084, df = 1, p = .043, OR = 1.285$). This finding indicated that for each one-unit increase in age, the likelihood that women used condoms every time they had vaginal sex with their main male partner increased by a factor of 1.285. Relationship status also remained significant, indicating that married women and those who lived with their partner were 74% less likely to use condoms every time they had vaginal sex with their main male partner than were unmarried women and those who did not live with their partner ($b = -1.357, SE = .371, Wald = 13.395, df = 1, p = .000, OR = .257$).
Income attained significance in this step \((b = .460, SE = .252, Wald = 3.330, df = 1, p = .068, OR = 1.584)\), indicating that for every one-unit increase in income the likelihood that women used condoms every time they had vaginal sex with their main male partner increased by a factor of 1.584. Past month sociability remained significant in this step \((b = -3.706, SE = 1.616, Wald = 5.259, df = 1, p = .022, OR = .025)\), indicating that for every one-unit increase in past month sociability the likelihood of women using condoms 100% of the time during vaginal sex with their main male partner decreased by a factor of .025.

Three of the four interaction terms attained significance at the \(p = \leq .10\) level. The findings for the interaction of income with past year civic participation showed that for each one-unit increase in income the effect of civic participation on consistent condom use was reduced by a factor of .114 \((b = -2.173, SE = 1.139, Wald = 3.641, df = 1, p = .056, OR = .114)\). The results also indicated that for every one-unit increase in income the effect of past month civic participation on consistent condom use was reduced by a factor of .770 \((b = -.262, SE = .158, Wald = 2.732, df = 1, p = .098, OR = .770)\). For the last significant interaction, education*past month sociability, the results showed that for every one-unit increase in education, the effect of past month sociability on consistent condom use increased by a factor of 2.535 \((b = .930, SE = .538, Wald = 2.990, df = 1, p = .084, OR = 2.535)\).
Table 7.3

Logistic Regression Analyses: Predictors of Protected Sex - Reduced Model

<table>
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<tr>
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<th>Step 1</th>
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<td>Education*PM Civic Participation</td>
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<td>85.1</td>
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<td>Hosmer-Lemeshow χ²</td>
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<td>5.716</td>
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*Note. B = regression coefficient; OR = odds ratio; *p ≤ .05, **p ≤ .10; χ² = Chi-square; Nagelkerke R² = pseudo R²; PY = Past Year; PM = Past Month; PW = Past Week.*
Three-way cross-tabulations were conducted to provide an alternative way of interpreting the interaction effects. Table 7.4 displays the results of the cross-tabulations. The findings for the first cross-tabulation show that low income women who were low in past year civic participation were more likely to engage in unprotected sex (less than 100% condom use). In contrast, low income women who were high in civic participation were more likely to engage in protected sex (100% condom use). However, the interaction of low income and past year civic participation was not statistically significant ($\chi^2 = 1.789(1), p = .181$). The results also showed that high income women who were low in civic participation were more likely to engage in protected sex. High income women who were also high in civic participation were less likely to engage in protected sex. Once again, these results were not statically significant ($\chi^2 = 1.232(1), p = .267$).

The results of the second cross-tabulation, reveal that low income women who are also low on past month civic participation are more likely to engage in unprotected sex. Low income women who are high on past month civic participation are more likely to engage in protected sex. However, effect of low income on past month civic participation was not statistically significant ($\chi^2 = .432(1), p = .511$). Women who were high on income but low on past month civic participation group were more likely to engage in protected sex. Women who were high on both income and past month civic participation were more likely to engage in unprotected sex. The effect of high income on past month civic participation was not statistically significant ($\chi^2 = .054(1), p = .817$).

The last cross-tabulation showed that women who had low educational attainment and low past month sociability were more likely to engage in protected sex. Women who had low
educational attainment but high past month sociability were less likely to engage in protected sex. The interaction of low educational attainment with past month sociability was the only significant interaction ($\chi^2 = 2.712(1), p = .100$). Women who had high educational attainment but low past month sociability were more likely to engage in protected sex. Women who were high on both educational attainment and past month sociability were more likely to engage in unprotected sex. However, the interaction of high educational attainment with past month sociability was not significant ($\chi^2 = 1.616(1), p = .204$).
Table 7.4
Three-Way Cross Tabulation: Effect of Interactions of SES and Social Capital on HIV Sexual Risk

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<th>SES</th>
<th>Social Capital</th>
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<th>100% Condom Use</th>
<th>Total N</th>
<th>%</th>
<th>X²</th>
<th>df</th>
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<td>%</td>
<td>n</td>
<td>%</td>
<td>N</td>
<td>%</td>
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<td>Low</td>
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<td>72.2</td>
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<td>Past Month Civic Participation</td>
<td>n</td>
<td>%</td>
<td>n</td>
<td>%</td>
<td>N</td>
<td>%</td>
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<td>Low</td>
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Note. n = subgroup size; N = sample size; X² = Chi-square, df = degrees of freedom; ** = p ≤ .10
Chapter Summary

This chapter presented the results of the statistical analyses conducted to describe the sample, reduce the cognitive and structural social capital variables, and create scales to test the three study hypotheses. Of the 370 women included in the sample, 53% were African American and 47% were Latina. The women in the sample were relatively young with the majority distributed almost equally among the 18-29, 25-29, and 30-39 age groups. Nearly one-quarter fell into the 40-49 age group and slightly more than one-tenth in the 50 and older age group. Chi-square analysis showed a significant relationship between age and race/ethnicity with Latinas more likely to fall into the younger two age groups, while African Americans were more likely to fall into the two oldest age groups. There were no significant differences by race/ethnicity in relationship status with their main male partner. Nearly two-fifths of the women were either legally married or living with their partner, while about three-fifths were not married, nor living with their partner. Overall, the women fell into the two lower income brackets.

Overall the women in this study tended to fall into the two lowest income brackets, while less than 30% fell into the two highest income brackets. Chi-square analysis revealed that the association between income and race/ethnicity, while significant, was relatively weak in strength. The results revealed an inconsistent pattern that only partially supported H1 which predicted that African American women would have higher incomes than Latinas. Instead, African American women were more likely than Latinas to be concentrated in the lowest and highest income brackets, while Latinas were more likely to be concentrated in second lowest and the middle income brackets. In terms of education, the second indicator of SES, the results showed that the women tended to have higher educational attainment with two-fifths having completed some
college credits or junior college, and about one-quarter having completed four years of college or more. In contrast, slightly more than one-tenth of the women had less than a high school education and slightly less than one-quarter had completed high school/G.E.D. The findings revealed a marginally significant and weak relationship between educational attainment and race/ethnicity. The results reflected an inconsistent pattern which only partially supported H₁. Latinas were more likely than African Americans to have less than a high school education, while African Americans were more likely than Latinas to have completed high school/G.E.D. While African American were more likely than Latinas to have completed some college or junior college, Latinas were more likely than African Americans to have completed four years of college or more.

The findings regarding the selected social capital variables revealed that most of the women in the sample never got together with their neighbors, only slightly more than a third were members of a church or other place of worship, and about one–fifth attended religious services a few times a month, while slightly more than one-fifth attended services at least once a week. While there were no significant differences by race/ethnicity in the frequency of getting together with neighbors, there were significant differences in membership in a church or other place of worship and in frequency of religious service attendance. African American women were more likely than Latinas to be members of a church or other place of worship and more likely to attend religious services at least once a week, and nearly every day. In contrast, Latinas were more likely than African Americans to report they never attended religious services.
Eight social capital scales were developed based on the PCA and reliability analyses conducted. These scales were used in an independent samples $t$-test to assess the component of $H_1$, predicting that African American women would have lower cognitive social capital and higher structural social capital than Latinas. The results showed significant differences in group means for the two measures of cognitive social capital (collective support and neighborhood trust) but only partially supported $H_1$ as they revealed that African American women had lower neighborhood trust but higher collective support than Latinas. In terms of the six structural social capital scales, the results showed significant differences in the means of the two groups for past month sociability, past week communication, and past week entertainment. The prediction that African Americans would have higher structural social capital than Latinas was not supported since they actually had lower means than Latinas on these three measures of structural social capital.

Most women in this sample did not have sex with partners other than their main male partner in the past six months. Of the 28% reporting they had sex with a partner other than their main male partner, about 12% reported having one non-main male partner, nearly 11% reported having two non-main male partners, and just over 5% reported having three or more non-main male partners. There were no significant differences between African American women and Latinas in terms of the number of non-main male partners they had sex with in the past six months. Overall the percentage of women reporting they used condoms during vaginal, oral, and anal sex with their main male partners in the past six months was relatively low (16.2%, 4.6%, and 2.4%, respectively). The results of the chi-square analysis revealed no significant differences by race/ethnicity on this indicator of sexual risk behavior. For those women
reporting they had one non-main male partner during the past six months, the percentage of condom use during vaginal, oral, and anal sex with this partner was even lower (9.5%, 1.9%, and .5%, respectively). However, the association between condom use and race/ethnicity was significant for vaginal sex with the non-main male partner, revealing that Latinas were more likely than African American women to use condoms during vaginal sex with this partner in the past six months.

A series of binary logistic regression models were entered using the block method to test $H_2$ and $H_3$. The results for Model 1 show both age and relationship were significant predictors of consistent condom use during vaginal sex with her main male partner. Controlling for relationship status, for each one-unit increase in age there is a 1.27 greater likelihood that women will use condoms 100% of the time when having vaginal sex with their main male partner. The findings also revealed, that controlling for age, women who were married or living with their partner were 69% less likely than women who were not married and not living with their partner to report using a condom every time they had vagina sex with their main male partner.

In the second model, where income and education were added to the demographic variables, age and relationship status remained significant predictors of consistent condom use, but income and education did not attain significance. In the third model, which added the 11 social capital variables to the demographic and SES variables, the only significant predictors of 100% condom use were relationship status and past month sociability. The effect of relationship status changed slightly. The results indicated that controlling for the other variables in the model, for every one-unit increase in past month sociability the likelihood of consistent condom
use was reduced by a factor of .194. The fourth model added the interaction terms for income and each of the 11 social capital variables to the demographic, SES, and social capital variables. Relationship status and past month sociability remained statistically significant with slight decreases in their respective odds ratios. The interaction of income with past year civic participation attained statistical significance, indicating that when all other variables in the model were held constant, a one unit increase in income reduced the effect of past year civic participation on consistent condom use by a factor of .077. The fifth model added the interaction of education with each of the 11 social capital variables to the demographic, SES, social capital variables, as well as income-social capital interactions. In this model, relationship status and past month sociability remained statistically significant and past month civic participation attained statistical significance. The results showed that controlling for all other variables in the model, for each one-unit increase in income, the effect of past month civic participation on 100% condom use was reduced by a factor of .621.

The reduced model included all the variables in the fifth model which attained a significance level of ≤ .10 and any variables that were in the interaction terms reaching this level of significance. The variables entered in the first step included age, relationship status, income, education, member of a church or other place of worship, past year civic participation, past month sociability, and past month civic participation. Of these only age, relationship status, and past month sociability were statistically significant at the ≤ .10 level. The findings indicated that as age increased by one-unit, the likelihood of using condoms every time during vaginal sex with a main male partner increased by a factor of 1.227. Married women and those living with their partner were 69% less likely to use condoms 100% of the time during vaginal sex with their
main male partner than unmarried women and those not living with their partner. For every one-unit increase in past month sociability, the likelihood of women using condoms every time they had vaginal sex with their main male partner was reduced by a factor of .347.

The final step of the model added the four interaction terms to the demographic, SES, and social capital variables. Age, relationship status, and past month sociability remained statistically significant and income as well as three interaction terms (income*past year civic participation, income*past month civic participation and education*past month sociability) attained statistical significance. The results indicate that for each one-unit increase in age, the likelihood that women used condoms every time during vaginal sex with their main male partner increased by a factor of 1.285. Married women and those who lived with their partner were 74% less likely to use condoms every time they had vaginal sex with their main male partner. For each one-unit increase in income, the likelihood that women used condoms every time they had vaginal sex with their main male partner increased by a factor of 1.584. For every one-unit increase in past month sociability, the likelihood that women used condoms 100% of the time during vaginal sex with their main male partner decreased by a factor of .025. The results also indicate that for each one-unit increase in income, the effect of past year civic participation on consistent condom use was reduced by a factor of .114. Similarly, for each one-unit increase in income, the effect of past month civic participation on 100% condom use was reduced by a factor of .770. The final significant interaction showed that for each one unit increase in education, the effect of past month sociability on consistent condom use increased by a factor of 2.535.
The results of the logistic regressions only partially supported $H_2$: controlling for socio-demographic variables, SES, cognitive social capital, and structural social capital will each have significant inverse associations with HIV-related sexual risk behaviors among African American women and Latinas. Contrary to expectation, the two indicators of SES (income and education) did not emerge as significant predictors of consistent condom use in the first five logistic regression models. In the reduced model, income attained statistical significance but only at the $p = \leq .10$ level. None of the cognitive social capital indicators emerged as significant predictors of 100% condom use. Among the structural social capital indicators, only past month sociability emerged as a significant predictor but in the opposite direction from that predicted.

The findings only partially supported $H_3$: there will be a significant interaction of SES and cognitive social capital and of SES and structural social capital such that the level of one variable will moderate the effect of the other variable on unprotected sex among African American women and Latinas. In Model 5, only one interaction (income*past month civic participation) emerged as statistically significant at the $p = \leq .05$ level. In addition to this interaction, three other interactions which attained statistical significance at the $\leq .10$ level in Model 5 (income*past year civic participation, education*past month sociability, and education*past month civic participation) were incorporated in the reduced model. Except for the interaction of education with past month civic participation, the other three interaction terms retained statistical significance in the reduced model. Income moderated the effects of past year civic participation and past month civic participation on consistent condom use. As income increased, the effects of past year and past month civic participation on 100% condom use decreased. However, the moderation effect of income was stronger for past year civic...
participation than for past month civic participation ($OR = .114$ vs. $OR = .770$). Education moderated the effect of past month sociability on consistent condom use; as education increased, the effect of past year sociability on 100% condom use also increased. This interaction had the strongest effect on consistent condom use ($OR = 2.535$).

The next chapter will summarize the study, discuss the limitations of the study, present the implications of the findings for social work theory, practice, and research, and conclude with recommendations for future research.
Chapter 5: Summary and Conclusions

This chapter provides an overview of the study. It begins with a summary of the problem addressed and its significance for social work and follows with summaries of the study’s purpose, conceptual framework, methodology, hypotheses, and findings. A discussion of the key findings of the study follows and the limitations and strengths of the study are presented and discussed. The implications of the study for theory, future research, social work practice, and policy are discussed and then conclusions are presented.

Summary

Introduction. The primary mission of the social work profession is to enhance the well-being of individuals and groups, meet their basic needs, and in particular, address the needs and promote the empowerment of those who are most marginalized, vulnerable, and oppressed as well as those living in poverty (NASW, 2008). Women of color, especially African Americans and Latinas, have been disproportionately affected by the HIV/AIDS epidemic since it began in the United States. These two highly vulnerable groups account for the overwhelming majority of HIV/AIDS incidence, prevalence, and mortality among women in this country (CDC, 2013b). Most U.S. women contract HIV infection through heterosexual transmission, which accounts for nearly three-quarters of infections among women living with HIV and more than four-fifths of those newly diagnosed with the infection (CDC, 2013b).

Since the HIV/AIDS health disparities experienced by African American and Latina women are avoidable and remediable, they are considered unfair, unjust, and inequitable. U.S. social workers are mandated by their professional code of ethics to work towards social justice
with all people, especially those in the most vulnerable, disadvantaged, marginalized, and 
oppressed groups (NASW, 2008). Consequently, understanding and eliminating the HIV/AIDS 
disparities experienced by African American and Latina women are major social justice concerns 
for social workers.

In the absence of an effective vaccine against HIV infection and of a cure for AIDS, 
prevention remains the most important strategy for averting new HIV infections among women 
in the United States. Since the mid-1990s HIV prevention researchers have made substantial 
progress in identifying and understanding key social determinants that contribute to women’s 
increased vulnerability to HIV infection. These social determinants include gender and 
socioeconomic inequalities, culturally prescribed gender norms, violence against women, and 
power imbalances in heterosexual relationships (Amaro, 1995; Amaro & Raj, 2000; Amaro et al., 
2001; Exner et al., 2003; Gómez, 2011; Jenkins, 2000; Zierler & Krieger, 1997). Despite the 
growing recognition of the role of social determinants in fueling the HIV epidemic among U.S. 
women, most of the evidence-based prevention interventions developed for women in this 
country have been grounded in rational-cognitive theories (Amaro & Raj, 2000; Amaro et al., 
2001; Crepaz et al., 2009; Dean & Fenton, 2010; Gómez, 2011; Exner et al., 2003; Lyles et al., 
2007; Zierler & Krieger, 1997). Mostly targeted to individuals and small groups, these rational-
cognitive interventions stress individual-level factors such as perceived risk, HIV knowledge, 
attitudes, behaviors as well as self-efficacy and safer sex (Amaro et al., 2001; Crepaz et al., 2009; 
Dean & Fenton, 2010; Gómez, 2011; Exner et al., 2003; Lyles et al., 2007; Zierler & Krieger, 
1997). Many of these interventions have demonstrated their efficacy in reducing risks for 
heterosexually transmitted HIV infection by increasing condom use and decreasing unprotected
vaginal or anal sex, as well by as reducing multiple sexual partners among women (Crepaz et al., 2009; Lyles et al., 2007). However, only a handful of these evidenced-based interventions have addressed key social determinants that increase women’s vulnerability to heterosexually transmitted HIV infection (Amaro, 1995; Amaro & Raj, 2000; Amaro et al., 2001; Gómez, 2011; Jenkins, 2000; Zierler & Krieger, 1997).

More recently, there has been growing evidence and agreement in the field that individual-level or small group behavioral interventions are more successful when they are combined with interventions that also address the social and structural factors that shape vulnerability to HIV infection and influence individual risk behaviors (Auerbach & Coates, 2000; Coates et al., 2008; Dean & Fenton, 2010; Gupta et al., 2008). Structural interventions address the underlying social and structural determinants that create inequitable social arrangements and power relations, based on factors such as race/ethnicity, gender, sexual identity, and economic class (Auerbach & Coates, 2000; Coates et al., 2008; Gupta et al., 2008). However, most of the structural interventions developed and implemented in the United States address the immediate conditions of life that increase individuals vulnerability to HIV infection rather than the underlying social determinants of these conditions (Adimora & Auerbach, 2010). Moreover, there has been limited progress in developing and integrating structural interventions in the United States because the majority of the research and program development in this arena has been carried out in developing countries (Adimora & Auerbach, 2010, Gupta et al., 2008; Sumartojo, 2000).

**Purpose.** This study was designed to examine HIV-related sexual risk behaviors among African American and Latina women through a social determinants of health lens. Specifically,
the study assessed how SES, a distal structural factor and social capital, an intermediary social factor, independently, and in interaction affect consistent condom use, a proximal individual factor, which in turn influences risk for HIV infection among African American and Latina women. This study was also intended to address the gap in the literature regarding the relationship of SES and social capital with HIV sexual risk behavior (i.e., unprotected sex) in the U.S. context. Most studies of the effects of social capital on HIV sexual risk behaviors among women have been conducted in sub-Saharan Africa (Campbell et al., 2002; Gregson et al., 2004; Pronyk et al., 2008). Only one U.S. study was identified in the literature and that study addressed the effects of social capital, poverty, and income inequality on AIDS case rates at the state-level (Holtgrave & Crosby, 2003). Other U.S. studies, also conducted at the state-level, have also addressed the effects of social capital as well as poverty and income inequality but in terms of outcomes such as adolescent sexual risk and protective factors, teen pregnancy rates, or STD rates (Crosby & Holtgrave, 2006; Crosby et al., 2003; Semaan et al., 2007).

**Conceptual framework.** The conceptual framework for this study incorporated elements of the social determinants of health model developed by the WHO’s CSDH (2008) and the social ecological model developed by Poundstone et al. (2004) to account for the structural, social, individual, and biological determinants of HIV/AIDS.

**Social stratification.** According to the social determinants of health conceptual framework, an individual’s position in the socioeconomic hierarchy is determined by powerful structural forces (social, economic, political, and cultural) (Graham, 2004; Solar & Irwin, 2007). These structural forces determine the bases for social stratification which in turn determine and the location of groups and individuals within the socioeconomic hierarchy. In turn, an
individual’s location in the socioeconomic hierarchy is a powerful determinant of his or her access to particular health enhancing resources (i.e., education, employment opportunities, income, property, and political influence) and to the likelihood that he or she will be exposed to health damaging or health promoting material living and working conditions as well as psychosocial, behavioral, and physiological factors (Graham, 2004; Solar & Irwin, 2007).

The framework also integrated Weber’s (1963) multidimensional theory of social stratification. According to Weber (1963) an individual’s position in the social hierarchy is determined by multiple sources of inequality (i.e., class, status, and party or political power). In turn, an individual’s position in the social hierarchy shapes his or her access to scarce and valued resources and consequently his or her life chances. Those occupying higher class, status, or political strata have better life chances than those in lower strata. These three dimensions of stratification are independent but interrelated. Those having a combination of higher class and status, and/or political power, have even better life chances. Thus, the connection between social stratification and health lies in the mechanisms (i.e., class, status) which determine the distribution of skills, knowledge, education, and material resources held by individuals that are important to their health (Lynch & Kaplan, 2000).

**Race/ethnicity.** Based on the review of the literature, and the dominant consensus among social scientists, race was conceptualized as a social rather than biological construct. Drawing on social determinants of health theory, race and ethnicity were considered bases of social stratification and as such were viewed as structural factors which determine an individual’s social position and access to valued and scarce socioeconomic resources (Graham, 2004; Solar & Irwin, 2007). Consistent with Weber’s (1963) stratification theory, race and ethnicity were
conceptualized as the bases of status groups which occupy different positions in the socioeconomic hierarchy based on the level of esteem or social honor they are accorded in society. Racial or ethnic group membership determines the position of individuals within the socioeconomic hierarchy and consequently their differential access to valued and scarce socioeconomic resources that shape their health. African American women were expected to have higher income and educational attainment than Latinas. Moreover, it was expected that cognitive and structural social capital would each have significant inverse associations with unprotected sex, stratified by race/ethnicity. It was also expected that cognitive social capital would be higher among Latinas than African Americans and that structural social capital would be higher among African Americans than Latinas.

**Socioeconomic status.** Drawing on the social determinants of health conceptual framework, SES was conceptualized as a structural factor that determines an individual’s position in the socioeconomic hierarchy and thus influences his or her access to health enhancing social and economic resources (Graham, 2004; Solar & Irwin, 2007). These resources shape an individual’s living and working conditions which in turn can enhance or damage his or her health (Graham, 2004; Solar & Irwin, 2007). Consistent with Weber’s (1963) stratification theory, SES was conceptualized as a multidimensional concept reflecting an individual’s position in the socioeconomic hierarchy resulting from the unequal distribution of social (i.e., education) and economic resources (i.e., income, wealth). In line with Weber’s (1963) conceptualization of “life chances,” many health researchers have used indicators such as education, income, employment status, and occupation to measure SES (Lynch & Kaplan, 2000). Conceptualized as a structural factor, SES was expected to affect unprotected sex indirectly by shaping women’s opportunities
to access the economic and social resources that determine their living conditions and access to HIV prevention information and services needed to avoid HIV infection.

Income and educational attainment were the two indicators of SES utilized in this study.

Income. Income was viewed as a resource that can provide women with material goods and services that are health-enhancing such as better quality housing, healthier food and nutrition, health care services, and exercise and recreational facilities (Galobardes et al., 2006; Winkleby et al., 1992). Indirectly, higher income can enhance women’s self-esteem and social standing by providing access to material goods that are relevant to participation in society such as fashionable clothes, automobiles, and electronic devices (e.g., cell phones, computers) (Galobardes et al., 2006). Higher income can also indirectly affect health by providing access to better quality education (Adler & Newman, 2002). In regard to women’s HIV-sexual risk, there is some evidence that suggests that poor women are less likely to use condoms than their higher income counterparts, that women who are economically dependent on their male sexual partners are more likely to engage in unprotected sex, and that staying in an economically motivated relationship is associated with significantly less condom use and with other sexual risk behaviors (i.e., lifetime sexual concurrency, lifetime anal sex) (Bankole et al., 1999; Biello et al., 2010; Dunkle et al. 2010).

Educational attainment. Educational attainment was conceptualized as a resource because exposure to formal education can provide women with enhanced knowledge, skills, and cognitive functioning. As a result, they may be more receptive to HIV sexual-risk reduction information and messages and better able to process such information; better able to access appropriate health services and resources such as HIV-testing and prevention education; and
better able to communicate effectively with health providers (Adler & Newman, 2002; Galobardes et al., 2006; National Research Council, 2004). Educational attainment can also affect HIV sexual-risk indirectly by shaping women’s current and future occupational and employment opportunities as well as income (Adler & Newman, 2002; Dunkle et al., 2010; Galobardes et al., 2006). Moreover, as an indicator of achieved social status, educational attainment can affect HIV sexual-risk by enhancing women’s self-esteem (Galobardes et al., 2006; Krieger et al., 1997).

Social capital. Viewed as an intermediary factor in the social determinants of health framework, social capital was conceptualized by drawing from elements of Bourdieu’s (1986), Coleman’s (1988; 1990), and Putnam’s (1993; 2000) theories. Both Bourdieu (1986), and Coleman (1988; 1990) viewed social capital as resources accrued by individuals by virtue of their participation in social relations/networks. While individuals can benefit from social capital, it is not viewed as a property of individuals but rather as inhering in the structure of social relations (Coleman, 1988; 1990). Based the formulation of social capital as resources derived from an individual’s social connections and networks, it was expected that women with lower social capital would be less likely to have access to the social and economic resources, including the health information as well as emotional and instrumental support which would enable them to avoid unprotected sex and engage in consistent condom use.

Based on Rostila’s (2011) model as well as Bourdieu’s (1986) and Coleman’s (1988; 1990) formulations of social capital, social networks, social trust and norms of reciprocity, as well as social resources were considered the components of social capital. The structural dimension of social capital (social relations/networks) was viewed as antecedent to the cognitive
dimension of social capital (social trust and norms of reciprocity), which in turn lead to the generation of social resources (Rostila, 2011).

Bourdieu (1986) viewed social capital as one of many forms of capital that while distinct are interrelated. He also postulated that the resources individuals accrue through their social relations vary depending on the volume and quality of the resources possessed by each member of their social networks. Hence, in this study, SES in the form of income was viewed as economic capital and in the form of education as cultural capital. Moreover, it was expected that the distribution of social capital among African American and Latina women would vary by level of SES. It was also expected that SES and social capital would interact, and that the effect of this interaction on women’s frequency of condom use would be stronger than their independent effects.

Coleman’s (1988; 1990) conceptualization of forms of social capital such as information channels, and norms and effective sanctions was also integrated into the conceptual framework for this study. Based on Coleman’s (1988; 1990) theory, it was expected that women with lower social capital would be less likely to be exposed to health promoting information and the norms and sanctions that would encourage them to avoid unprotected sex and engage in consistent condom use. The measures of cognitive and structural social capital used in this study were influenced by Putnam’s (2000) formulation of the concept, which emphasizes the role of social networks and the norms of reciprocity and trustworthiness that arise from them in facilitating coordinated social action.

**Demographic factors.** The social determinants of health conceptual framework posits that individual level factors (e.g., biological, behavioral, demographic) are influenced by
intermediary factors and in turn contribute to an individual’s risk of infection and illness (Irwin & Solar, 2007; Poundstone et al., 2004). Age and relationship status were two demographic factors included in the study as control variables. Based on the findings in the literature it was expected that older women would be more likely to engage in unprotected sex than younger women and that women who were married or living with their partner would be more likely to engage in unprotected sex than single women or those not living with their partner. It was also expected that Latinas would be more likely to be younger and to be married or cohabiting than African American women. Moreover, it was expected that Latinas would experience higher frequency of unprotected sex with their main male partner than African American women.

**Methodology.** This study was a secondary data analysis of cross-sectional baseline data on a subsample of 370 African American and Latina women who participated in the original GEM study.

**Original study methodology.** The GEM study was a five year longitudinal study designed to identify, assess, and compare socio-culturally sanctioned sexual gender norms for African American and Latina women and to identify the extent to which women of differing socioeconomic contexts comply with such norms. The study was also intended to test a gender-economic model for understanding HIV risk in women by assessing how the intersection of sexual gender norms and socioeconomic context contributes to, and predicts, sexual risk behaviors among African-American and Latina women.

The original study sample consisted of 512 African American and Latina women, recruited from five counties in the greater San Francisco metropolitan area. Participants were recruited using venue-based targeted sampling and respondent-driven sampling. These two
different but complementary sampling methods have been shown to result in more representative samples of hard-to-reach populations (Heckathorn, 1997; Heckathorn, 2002; Watters & Biernacki, 1989). The study sample included women 18 years of age or older, of varying socioeconomic contexts, who were HIV-negative and had at least one male sex partner in the previous 12 months.

Cross-sectional baseline data were collected using a survey instrument which included an extensive array of questions on demographic characteristics, general health, substance use, housing, neighborhood, discrimination, social capital, financial hardship, social support, employment status and occupation, income and wealth, education, relationship status, gender roles, sexual behavior (with main, non-main, male and female partners), general sex and sexuality, peer norms and self-perception, sexual abuse, HIV knowledge, relationships (e.g., communication, decision-making, power). Respondents completed the survey using Audio Computer-Assisted Self Interview technology (A-CASI), an easy to use and effective method for low literacy participants. Each survey question was displayed on a computer monitor while an audio recording of the question was simultaneously played through a headphone. Participants were given the option of entering their responses to the survey questions directly on the computer utilizing a mouse and keyboard or a touch screen. This self-administered method provides increased privacy and has been shown to result in participants reporting higher rates of sensitive behavior (i.e., sexual and drug use behaviors) than in paper-and-pencil surveys (Des Jarlais et al., 1999; Metzger et al., 2000).

**Current study methodology.** This study utilized the baseline cross-sectional data of a subsample comprised of 370 women (196 African American and 174 Latina). The original study
measured self-reported frequencies of vaginal, oral, and anal sex with main and non-main male sex partners and calculated the proportion of times condoms were used during these instances of sex. There was a large amount of missing data for oral and anal sex with main male partners and for vaginal, oral, and anal sex with non-main male partners (ranging from 207 to 510 cases). Therefore, the only type of condom use examined in the logistic regression analyses was the proportion of condom use during vaginal sex with the main male partner.

**Study sample.** The 370 women selected for inclusion in this study were those who responded to the question regarding the use of condoms during vaginal sex with a main male partner in the six months before they completed the survey. Of the 512 women in the total sample, data were missing for 142 women: 82 reported they had no main male partner in the 6 months prior to the interview; 23 reported they did not have vaginal sex; and 37 responded they did not know, declined to answer, or did not respond to the question.

**Dependent variable.** HIV sexual risk behavior was conceptualized in this study as having unprotected sex, that is, sex without a condom. HIV sexual risk behavior was measured using a computed variable from the original study labelled proportion (%) of condom use during vaginal sex with main male partner in the past six months. This variable was derived by dividing the number of times the woman used condoms during vaginal sex with her main male partner in the past six months (numerator) by the number of times the woman had vaginal sex with her main male partner in the past six months (denominator). To conduct the logistic regression analyses, this variable was recoded into a dichotomous variable. Inconsistent condom use, representing unprotected sex, was operationalized as less than 100% condom use during vaginal sex with a main male partner (coded with a value of 0). Consistent condom use, representing protected sex,
was operationalized as 100% condom use using vaginal sex with a main male partner (coded with a value of 1).

**Independent variables.** The independent or predictor variables for this study are race/ethnicity, SES, cognitive social capital, and structural social capital.

**Race/ethnicity.** African-American women were defined as those who self-identified as being African-American, Black, or of African descent. Latina women were defined as women who self-identified as being Latina or Hispanic and included Mexican-American, Mexican, Central American, South American, Puerto Rican, Dominican, or Spanish. In the GEM study, each woman self-reported her racial or ethnic group membership by selecting the category which best described her racial/ethnic background. Most selected Black/African American or Latino/Hispanic. A derived variable (based on information from the questionnaire and the screener data immediately after data collection) was used to categorize participants by race/ethnicity. In this study, this derived variable was used to categorize the women African American (coded as 1) and Latina (coded as 0).

**Socioeconomic status.** In this study, SES was operationalized by two independent variables; income and educational attainment. The economic dimension of SES was operationalized as income. Income was viewed as a measure reflecting the economic resources derived from an individual’s class position. The income of participants was determined by their responses to a question asking them to report their total personal income for 2004. The responses to this question were collapsed into four categories: (1) Less than $10,000; (2) $10,000 - $29,999; (3) $30,000- $49,999; and (4) $50,000 and greater. Educational attainment was used as a measure to reflect the social resources derived from an individual’s status position. The
participants’ educational attainment was determined by their reports of the highest grade or year of school they completed. A computed variable was created to group the responses into the following four categories: (1) Less than High school; (2) High school/G.E.D.; (3) Some college/Junior college; and (4) College graduate (from a four-year college or university) and Higher (Some graduate school, Graduate degree- Masters level, Graduate degree-Doctorate level).

Social capital. The measures of social capital used in the GEM study questionnaire were derived from two well-known social capital instruments: The 2000 Social Capital Community Benchmark Survey (SCCBS), and the World Bank’s Integrated Questionnaire for the Measurement of Social Capital (SC-IQ) (Grootaert et al., 2004; Saguaro Seminar, 2000). GEM study investigators selected and adapted specific items from these two surveys to include in the questionnaire. Structural social capital. Six items were selected from the GEM study questionnaire to operationalize structural social capital in this study. These items, adapted from the SCCBS grouped various types of activities related to socializing with friends, entertainment, civic participation, political participation, and communication (via phone, email, discussion), into past year, past month, and past week periods. In addition, three items capturing frequency of socializing with neighbors, membership in a church or other place of worship, and the frequency of religious service attendance were also used as indicators of structural social capital. Based on exploratory factor analyses using PCA and varimax rotation techniques as well as reliability analyses, the 38 items related to past year, past month, and past week activities were reduced to six summative scales. The twelve past year activities were reduced to two scales: past year civic participation (5 items, \( \alpha = .68 \)) and past year political participation (5 items, \( \alpha = .60 \)).
The twelve past month activities were reduced to two scales: past month sociability (5 items, \( \alpha = .65 \)) and past month civic participation (4 items, \( \alpha = .54 \)). The fourteen past week activities were reduced to two scales: past week communication (5 items, \( \alpha = .71 \)) and past week entertainment (4 items, \( \alpha = .52 \)). All of the scale items were coded Yes = 1 and No = 0. In addition, membership in a church or other place of worship, was coded as Yes = 1, No = 0. Frequency of religious service attendance was measured using a five item Likert-like scale ranging from 1 = Never to 5 = Nearly every day. Frequency of getting together with neighbors was measured by a 6 item Likert-like scale ranging from 1 = Never to 6 = Four or more times a week.

Cognitive social capital. The cognitive dimension of social capital was conceptualized as perceptions of trust (generalized and particularized), social cohesion, solidarity and support, and collective action and cooperation, which lead to the generation of social resources. Ten items, adapted from the SC-IQ, were selected from the GEM study questionnaire to operationalize these variables. Two scales were constructed from these items based on the results of the PCA and reliability analyses: collective support (4 items, \( \alpha = .83 \)) and neighborhood trust (4 items, \( \alpha = .60 \)). Each of the items in these two scales was measured on a Likert-like scale and coded or reverse coded such that high scores indicated high social capital and low scores indicated low social capital.

Control variables. Age and relationship status were the control variables in this study. Age was measured using a computed variable (AGE1) based on respondents’ reported date of birth and the baseline interview date. This variable was transformed to create five age categories: (1) 18-24 years, (2) 25-29 years, (3) 30-39 years, (4) 40-49 years, and (5) \( \geq 50 \) years.
Relationship status was measured by respondents’ report of their current relationship with their main male partner. The responses were recoded and collapsed into four categories: 4 = Legally married; 3 = In relationship and living together; 2 = Dating (boy-friend-girlfriend but not living together); 1 = Other, No main male partner, Decline to answer, or No response. For the purposes of the logistic regression analyses, these response categories were recoded such that 1 = Legally married/In a relationship and living together and 0 = All other categories (3-5, No main male partner, Decline to answer, or No response).

**Hypotheses.** Three main hypotheses were developed to examine the relationships between SES, social capital, and sexual risk behaviors among African American and Latina women:

**H$_1$:** Compared to Latinas, African American women will have higher SES, lower cognitive social capital, higher structural social capital, and higher frequency of unprotected sex.

**H$_2$:** Controlling for socio-demographic variables, SES, cognitive social capital, and structural social capital will each have significant inverse associations with HIV-related sexual risk behaviors among African American women and Latinas.

**H$_3$:** There will be a significant interaction of SES and cognitive social capital, and of SES and structural social capital such that the level of one variable will moderate the effect of the other variable on unprotected sex among African American women and Latinas.

**Study findings.** The following sections summarize the findings regarding the characteristics of the sample related to the demographic, SES, social capital, sexual risk behavior variables. Then, the findings regarding the three hypotheses tested are presented **Demographic characteristics.** Of the 370 women in the sample, 53% were African Americans and 47% were
Latinas. The median age of the women was 33.2 years. A plurality (42.1%) of the women were concentrated in the two younger age groups: 18-24 years (22.4%) and 25-29 years (19.7%). Nearly 23% of the women were between the ages of 30 and 39 years and about 24% were between the ages of 40 and 49 years. A smaller proportion (10.8%) of the women were 50 years or older. The association between age and race/ethnicity was statistically significant ($\chi^2(4) = 14.716, p = .005$). As expected, Latinas were more likely to be in the 18-24 years (26.4% vs. 18.9%) and the 25-29 years (23.0% vs. 16.8%) age groups, while African Americans were more likely to be in the 40-49 years (26.5% vs. 21.8%) and 50 and older (15.8% vs. 5.2%) age groups.

In terms of their relationship to their main male partner, a plurality (44.2%) of the women in this sample were dating but not living with their partner. Only 20% were legally married, 19.2% were in a relationship and living with their partner, and 16.5% were no longer in a relationship. Although it was expected that Latinas would be more likely to be married than African American women, the findings revealed no significant differences in relationship status ($\chi^2(3) = 2.319, p = .509$).

**Socioeconomic status.** The median income for the women in this study was $14,000 per annum. Most (70%) of the women in this sample fell into the two lowest income brackets: 40% had incomes below $10,000 per annum and 30% had incomes between $10,000 and $29,999 per annum. Less than one-fifth of the women had annual incomes between $30,000 and $49,999, and slightly more than one-tenth had incomes of $50,000 or more per annum. The median level of education completed by women in this sample was some college/junior college credits. About 40% had completed some college/junior college credits and about one-quarter had completed
four years of college or more. In contrast, 11.6% of the women had completed less than a high school education and 23.0% had completed high school/G.E.D.

Social capital. Structural social capital, was measured by three single-item and six scalar indicators of organizational membership or participation in a variety of social, civic, and political activities. Only 37.6% of the women in this sample were members of a church or other place of worship. While the women varied in terms of how often they attended religious services, the median was a few times a year (30.8%). About a quarter of the women never attended religious services, one-fifth attended a few times a month, and another on-fifth attended at least once a week. Only a few (2.2%) attended religious services nearly every day. Overall, most (58.9%) women in this sample reported they never got together with their neighbors. About 11% reported getting together with neighbors a few times a year, and 9.2% reported doing so at least once a month. About 5% reported they got together with their neighbors two to three times a month, 12.4% did so three times a week, and 3.5% did so four or more times a week.

The mean scores for the women on the scalar indicators of structural social capital, were relatively low. The highest mean score was for past month civic participation \( (M = 1.35, SD = 1.23) \). The mean scores for the other indicators of structural social capital were substantially lower: past month sociability \( (M = .53, SD = .31) \); past week communication \( (M = .50, SD = .34) \); past week entertainment \( (M = .40, SD = .31) \); past year political participation \( (M = .27, SD = .25) \) and past year civic participation \( (M = .13, SD = 22) \). Overall, structural social capital was relatively low among the women in this sample.

Cognitive social capital, measured by indicators of perceptions of support and solidarity and of trust (generalized and particularized) among neighbors was higher than structural social
capital among the women in this sample. The mean score for collective support was 3.15 ($SD = .99$), but the score for neighborhood trust was lower ($M = 2.62, SD = .96$).

**Sexual risk behaviors.** The women differed on the two indicators used to describe their sexual risk behavior. Having multiple sex partners is a common measure of sexual risk. However, the findings indicated that most of the women (71.9%) reported they had no non-main male sexual partner in the previous six months, suggesting they were at low risk for HIV infection on this measure. Only 12.4% reported having one non-main male partner; 10.8% reported they had two non-main male partners; and 5.1% reported they had three or more non-main male partners during that time period. The other measure of sexual risk for women was unprotected sex with a male partner. Overall, the women in this sample reported relatively low frequency of condom use during vaginal (16.2%), oral (4.6%), and anal (2.4%) sex with their main male partner. Among those reporting they had one non-main male partner the frequency of condom use was slightly higher for vaginal (23.9%) and oral (6.5%) sex, but nil during anal sex with that partner. These findings suggest that the women were at high risk for HIV infection due to unprotected sex with their male partners.

**Hypotheses testing.** The following sections summarize the findings regarding the three hypotheses tested in this study.

**Hypothesis one.** The first hypothesis predicted that compared to Latinas, African American women would have higher SES, lower cognitive social capital, higher structural social capital, and higher frequency of unprotected sex. Chi-square analysis was used to test statistically significant differences between the two groups on the two measures of SES. Support for this hypothesis was mixed on both measures of SES. The association between annual income
and race/ethnicity was significant ($\chi^2(3) = 11.532, p = .009$). However, the pattern of the association was not uniform, lending partial support for $H_1$. Contrary to $H_1$, African American women were more likely than Latinas to fall into the lowest income bracket (45.4% vs. 33.9%, <$10,000$). However, African American women were also more likely than Latinas to fall into the highest income bracket (13.8% vs. 10.3%, $\geq$ $50,000$). On the other hand, Latinas were more likely than African American women to fall into the second lowest (31.6% vs. 28.6%, $10,000$-$29,999$) and the middle income bracket (24.1% vs. 12.2%, $30,000$-$49,999$).

The difference between the two groups in educational attainment was marginally significant ($\chi^2(3) = 7.643, p = .054$). Again, the pattern of the association was not uniform and only partially supported the prediction in $H_1$. While the women did not differ in completing less than a high school education, African Americans were more likely than Latinas to have completed high school/G.E.D. (25.5% vs. 20.1%) and to have completed some college or junior college credits (43.4% vs. 36.8%). However, the pattern differed at the highest level of educational attainment, indicating that African Americans were less likely than Latinas to have completed four years of college or more (19.4% vs. 31.6%).

Support for the prediction that African American women would have lower cognitive social capital than Latinas was also mixed. The results of the independent samples $t$-tests for the two cognitive social capital scales used to evaluate this prediction were significant. African Americans scored lower than Latinas on mean neighborhood trust ($M = 2.49, SD = 0.95$ vs. $M = 2.77, SD = 0.96$), but they scored higher on mean collective support ($M = 3.35, SD = 1.01$ vs. $M = 2.92, SD = 0.94$). Hence, the prediction was supported for neighborhood trust but not for collective support.
The findings provided mixed support for the prediction that African American women would have higher structural capital than Latinas. Chi-square analyses were used to determine if there were significant differences between the two groups on the three single-item structural capital variables. The prediction was supported for two of these three measures. African American women were significantly ($\chi^2(1) = 13.952, p = .000$) more likely than Latinas to be a member of a church or place of worship (46.4% vs. 27.6%). Compared to Latinas, African American women were also significantly more likely than Latinas ($\chi^2(4) = 11.084, p = .026$) to attend religious services at least once a week (28.6% vs. 15.5%), and nearly every day (2.6% vs. 1.7%), but less likely to report they never attended religious services (19.9% vs. 29.3 %). However, the hypothesis was not supported for frequency of getting together with their neighbors during the past six months ($\chi^2(5) = 5.390, p = .370$), as no significant differences were found between the two groups on this indicator of structural social capital.

The prediction that African American women would have higher structural social capital was not supported by the results of the independent samples $t$-tests for the six scales measuring this dimension. While significant mean differences between the two groups were found on three of the six indicators (past month sociability, $t(368) = 2.90, p < .05$; past week communication, $t(368) = 1.88, p < .05$; and past week entertainment, $t(368) = 4.52, p < .05$) the direction of the association was not in the hypothesized direction. Compared to Latinas, African American women had lower mean scores on these three structural social capital indicators (past month sociability, $M = 0.48, SD = 0.30$ vs. $M = .58, SD = 0.30$; past week communication, $M = 0.47, SD = 0.34$ vs. $M = 0.53, SD = 0.33$; past week entertainment, $M = 0.33, SD = 0.28$ vs. $M = .47, SD = 0.32$).
Hypothesis one also predicted that African American women would have higher frequency of unprotected sex than Latinas. Support for this prediction was also mixed. No significant differences between the two groups were revealed by the chi-square analyses for condom use during vaginal, oral, or anal sex with their main male partners. However, among those reporting having one non-main male partner, significant differences between the two groups were found for condom use during vaginal sex, but not for condom use during oral or anal sex. African American women were more likely than Latinas to report they did not use condoms during vaginal sex with their non-main male partner in the past six months (91.3% vs. 60.9%). Stated another way, African American women were 85.2% less likely than Latinas to use condoms during vaginal sex with their non-main male partner ($OR = .148$). This finding supported the prediction that African American women would have higher frequency of unprotected sex than Latinas.

Hypothesis two. The second hypothesis predicted that controlling for socio-demographic variables SES, cognitive social capital, and structural social capital would each have significant inverse associations with HIV related sexual risk behaviors among African American women and Latinas. This hypothesis was tested using binary logistic regression analyses because the dependent variable (% condom use during vaginal sex with the main male partner) was dichotomous. The level of statistical significance was set at $\leq .05$.

Income and educational attainment were added to the two demographic variables in the second logistic regression to test the prediction regarding SES. This prediction was not supported by the findings for Model 2. After holding age and relationship status constant, neither income nor educational attainment were significant predictors of consistent condom use
during vaginal sex with the main male partner. However, in the first step of the reduced model, income attained statistical significance \((OR = 1.584, p = \leq .10)\). This finding provided support for the prediction. Controlling for all other variables in the model, as income rose the likelihood that women would use condoms every time they engaged in vaginal sex with their main male partner increased. Conversely, as income rose, inconsistent condom use decreased lending support to the prediction that SES would be inversely related to HIV sexual risk behaviors.

To test the prediction regarding cognitive and structural social capital, the eleven social capital variables were added to the demographic and SES variables in the third logistic regression model. The prediction was partially supported as past month sociability \((OR = .194)\), one of the nine indicators of structural social capital, was found to be a statistically significant predictor of consistent condom use during vaginal sex with the main male partner, after holding all other variables in the model constant. Past month sociability retained statistical significance as a predictor of condom use in Model 4 and Model 5 as well as Step 1 and Step 2 of the reduced model \((ORs = .019, .000, .347, \text{ and } .025, \text{ respectively})\). The findings showed that as past month sociability increased the likelihood that women would use condoms every time they had vaginal sex with their main male would decrease. Hence, at high levels of past month sociability the likelihood of unprotected sex was also high, suggesting this form of social capital was not health protective. None of the cognitive social capital variables were statistically significant predictors of consistent condom use.

**Hypothesis three.** The third hypothesis predicted that there would be a significant interaction of SES and cognitive social capital, and of SES and structural social capital such that the level of one variable would moderate the effect of the other variable on unprotected sex
among African American women and Latinas. This hypothesis was tested by Models 4 and 5 of the binary logistic regression analyses. In Model 4, the interactions of income with each of the eleven social capital variables were added to the demographic, SES, and social capital variables. The results indicated support for the prediction of a statistically significant interaction of SES and structural social capital but only in the case of the interaction of income with past year civic participation ($OR = .077$). After controlling for all other variables in the model, as income increases the effect of past year civic participation on consistent condom use decreases. However, the prediction was not supported for the interaction of income with any of the indicators of cognitive social capital.

Model 5 added the interaction of educational attainment with the eleven social capital variables to the demographic, SES, social capital, and interactions of income with the eleven social capital variables. The interaction of income with past year civic participation did not retain statistical significance as a predictor of consistent condom use during vaginal sex with the main male partner. The only interaction that attained statistical significance was that of income with past month civic participation ($OR = .621$). After controlling for all other variables in the model, as income increases the effect of past month civic participation on 100% condom use decreases. This finding supported the prediction of an interaction of SES with structural social capital.

The reduced model included all the predictors that attained statistical significance at the $\leq .10$ level in Model 5. This analysis was conducted in two steps. In the first step, the model tested the main effects of age, relationship status, income, education, member of a church or other place of worship, past year civic participation, past month civic participation, and past
month sociability. Three of the four interaction terms included in the final step of the reduced model attained statistical significance \( p = \leq .10 \), lending support to hypothesis three. The interaction of income with past year civic participation \( (OR = .114) \) and of income with past month civic participation \( (OR = .770) \) showed that as income increased the effect of civic participation on consistent condom use during vaginal sex with the main male partner decreased. The interaction of education with past month sociability \( (OR = 2.535) \) indicated that as education increased the effect of past month sociability on 100% condom use during vaginal sex with the main male partner increased. However, the interaction of education with past month civic participation was not statistically significant. These findings lent support to the prediction of a significant interaction of SES with structural social capital, but did not support the prediction of a significant interaction of SES with cognitive social capital.

The magnitude of the effect was strongest for the interaction of education with past month sociability, followed by the effect of the interaction of income with past year civic participation, and weakest for the interaction of income with past month civic participation. As education attainment increased, the effect of past month sociability on consistent condom use during vaginal sex with a main male partner increased by 254%. The results also showed that as income increased the effect of past year civic participation on 100% condom use decreased by 89% and that as income increased the effect of past month civic participation on consistent condom use decreased by 23%.

**Discussion of the findings.** As expected, Latinas were significantly more likely to be younger than African Americans. In contrast, Moreno et al.’s (2007) study of sexual risk factors for HIV among Latina and African American found no significant differences in age between the
two groups. Although it was expected that Latinas would be more likely to be married than African American women, the findings indicate no statistically significant difference between the two groups on this variable. This finding is confirmed by Moreno et al. (2007) who found no significant differences in marital status between the African American and Latina women in their study.

Although participation in civic, social, and political, activities have been identified as important ways to create social capital, such participation was relatively low among the women in this study. Findings from a number Australian studies may provide some insight into the factors that may contribute to the level of women’s participation in civic, social, and political activities as well as voluntary groups. A study of an Australian metropolitan region found that levels of participation were highest in informal social activities and lowest in collective civic activities (Baum, Bush, Modra, Murray, & Cox, 2000). The study also found that low levels of participation in social and civic activities were reported more frequently by individuals with lower levels of income and education (Baum et al., 2000). Caiazza (2005) found that feeling safe in one’s neighborhood was associated with higher participation in community organizations and activities for women overall. However, perceived safety was more important in determining civic participation for higher income women, while knowing one’s neighbors was more important for lower income women (Caiazza, 2005). Osborne, Ziersch, and Baum (2008) found that not working full-time, living in a married relationship, and having a university education significantly predicted women’s regular participation in voluntary groups. Moreover, Ziersch, (2005) found that those who were materially better off in terms of financial and human capital (i.e., education) resources had greater access to elements of social capital and reported better
health. It may be useful to examine whether these or other demographic and socioeconomic factors contributed to the low levels of civic, social, and political participation of the women in this study. Most of the women had lower income and were not married. While a plurality had completed some college/junior college credits, only a quarter had completed four years of college or more.

A large majority of women in this study did not have multiple male partners and no statistically significant differences were found between the two groups on number of non-main male partners. Contrary to this finding, Moreno et al. (2007) found that significantly more African American than Latina women reported having two or more sexual partners in the past year. While most women in this study did not use condoms during vaginal, oral, or anal sex with their main male partner, there were no significant differences found between the two groups on these measures. In contrast, Moreno et al. (2007) found African American women were nearly twice as likely as Latinas to report having used condoms during sex with their main male partner in the past ninety days. For women in this study who reported having one non-main male partner in the past six months, condom use during sex with their non-main partner was also relatively low. However, significant differences between the two groups were only found for condom use during vaginal sex with their non-main male partner. This finding indicating that African American women were more likely to engage in unprotected sex than Latinas, confirmed the prediction in hypothesis one. While this study did not compare condom use by partner type, the women reported relatively low percentages of condom use during sex with both main and non-main partners. Studies among African American and Latina women that have compared their condom use by partner type have found that women are less likely to use condoms with their
main or steady partners than with their casual or non-main partners (Anderson, 2003; Duncan, 2011; Dixon et al., 2003; Fernandez-Esquer et al., 2004; Flaskerud et al., 1996; Lauby et al., 2000; Marin & Marin, 1992 Sikkema et al., 1996).

Support for the hypothesis that African Americans would be higher on SES, measured by income and educational attainment than Latinas was mixed in this study. Contrary to the prediction, African Americans were more likely than Latinas to be in the lowest income bracket, but also more likely to be in the highest income bracket. Also contrary to the prediction, Latinas were significantly more likely than African Americans to have completed four years of college or more. Conversely, Moreno et al.’s (2007) study found that African Americans were significantly more likely than Latinas to have completed four years of college or more.

This study compared African American women and Latinas on their level of cognitive and structural social capital. The review of the literature did not identify any studies that made such a comparison. Mixed results were found supporting the prediction that African American women would have lower cognitive social capital than Latinas. The prediction was supported by the finding that African Americans had significantly lower neighborhood trust than Latinas. This finding suggests that African Americans were more distrustful than Latinas of people in general, and of people in their neighborhood. They also perceived that they had to be careful or people would take advantage of them and that people generally do not trust each other in matters of lending or borrowing money. Trust is an important component of social capital. Putnam (2000) conceptualized social capital as a collective resource emanating from social networks characterized by trust and norms of reciprocity, which facilitate civic engagement and coordinated action. For Coleman (1988) obligations and expectations, growing out of trust in the
social environment are an important form of social capital. He argued that trustworthiness of the social structure is needed to ensure the repayment of obligations (Coleman; 1988). Rostila (2011) posited that the structural dimension of social capital (social relations/networks) is antecedent to the cognitive dimension of social capital (social trust and norms of reciprocity), which in turn lead to the generation of social resources. According to Rostila (2011), groups whose members demonstrate trustworthiness and place trust in others are better able to engage in collective actions to benefit the group. The lower trust found among African American women suggests that they may be less likely to engage in collective actions for mutual benefit and less likely to access social resources within social networks.

However, the findings also indicated that African Americans scored higher on mean collective support than Latinas. The scale measuring collective support is composed of four items that capture perceptions that people in their neighborhood would be likely to get together to help someone or to help them in times of crisis, that most people in their neighborhood are willing to help if they need it, and of a strong feeling of togetherness or closeness in their neighborhood. It is important to note that neither neighborhood trust nor collective support were significant predictors of condom use.

Contrary to the prediction, in the second logistic model, neither measure of SES significantly predicted consistent condom use. However, in the first step of the reduced model, income emerged as a significant predictor of consistent condom use. As income increased the likelihood of consistent condom use increased. There is strong evidence in the literature that SES is associated with condom use. For example, a study of African American, Latina, and White women found that income was directly related to unprotected sex (Ickovics et al., 2002).
As income increased unprotected sex increased (Ickovics et al., 2002). Zambrana et al. (2004) also found, that women in higher annual income categories were less likely to use condoms than those in the lowest income category. Other studies have found that education is positively associated with condom use among women (Albarracin & Plambeck, 2010; Bankole et al., 1999; Holmes et al., 2008; Moreno & El-Bassel, 2007; Reece et al., 2010; Saul et al., 2001). Some studies have also shown that lower educational status is associated with greater unprotected sex among women (Dixon et al., 2001; Shih et al., 2011).

None of the cognitive social capital indicators emerged as a significant predictor of consistent condom use. However, past month sociability was the only structural social capital indicator that significantly predicted consistent condom use. As past month sociability increased the likelihood of consistent condom use decreased. Conversely, at high levels of sociability the likelihood of unprotected sex was also high. Past month sociability was measured by a 5-item scale that included activities related to entertainment and socializing such as going to a night club, disco or bar; going to the theater, opera, or concerts; going out to a restaurant for dinner; going to friends’ home for dinner or the evening; and having friends in for dinner or the evening. Other structural capital activities such as civic or political participation were not significant predictors of consistent condom use.

The finding that as past month sociability increased, consistent condom use decreased may reflect the association of past month sociability with other variables such as alcohol and drug consumption which were not measured in this study. In the PCA both “went to a night club, disco, bar” and “went to friends’ house for dinner or evening” had the highest factor loading (.690) to the past month sociability component. Going to places like night clubs, discos and bars
may be associated with consumption of alcohol or drugs, factors which have been correlated to unprotected sex in some studies (Leigh & Stall, 1993; Wingood & DiClemente, 1998b). A sub-Saharan African study found that among members of “stokvels” women of all ages were more likely to have a casual partner, and young women were more likely to drink alcohol than non-members, both factors placing them at increased sexual risk of HIV (Campbell et al., 2002). Stokvels are voluntary savings clubs whose members meet on a regular basis to contribute their money to a common fund that is then given to a different member each month (Campbell et al., 2002). Stokvel meetings are accompanied by social festivities that typically involve the sale and consumption of alcohol (Campbell et al., 2002). Although stokvels provide members with positive benefits in the form of increased financial resources, “…social support, recreation, and conviviality.” membership is also associated with factors that increase women’s sexual risk for HIV such as drinking and casual sex (Campbell et al., 2002, p. 50). Although not related to the health outcome of this study, Mukerjee’s (2013) study of the association of social interaction and self-rated health, found that for Blacks going to bars was significant and negatively associated with self-rated health. Consumption of alcohol and/or drugs before or during sex with their main male partners were not measured in this study, yet they may be factors that help to explain how increased past month sociability contributed to greater frequency of unprotected sex among the women in this study.

There is a paucity of literature on the relationship between social capital and condom use and few studies make the distinction between the cognitive and structural dimensions of social capital. However, contrary to the finding in this study, one study conducted in sub-Saharan Africa found that cognitive social capital (i.e., perceived reciprocity and community support)
was a significant predictor of consistent condom use among women (Pronyk et al., 2008). Women residing in a household with greater cognitive social capital had higher levels of consistent condom use (Pronyk et al., 2008). The study also found that structural social capital predicted condom use (consistent and at last sexual episode with a non-spousal partner) among women (Pronyk et al., 2008). Structural social capital was measured by participation in various types of community and civil society groups such as churches, burial societies, and prayer groups; economic groups, political groups, sports teams, and cultural groups. Women with high levels of structural social capital had more protective patterns of condom use. But the study also found that women had higher levels of both HIV prevalence and incidence (Pronyk et al., 2008). This finding underscores the complexity of the relationship between social capital and HIV risk (Pronyk et al., 2008). While social capital is protective it also has the potential to increase vulnerability to HIV (Pronyk et al., 2008). This is also an implication of the finding in our study that as sociability increased the likelihood of unprotected sex increased.

Other sub-Saharan African studies have shown that the association between structural social capital measured by participation in various types of groups and organizations and HIV-related outcomes varied by age and type of group. For example, young women who belonged to sports clubs were less likely to be HIV-positive and more likely to use condoms with casual partners than non-members (Campbell et al., 2002). In contrast, women of all ages who belonged to stokvels were more likely to have a casual partner, and young women were more likely to drink alcohol than non-members (Campbell et al. 2002).

The final step in the reduced model showed significant interactions of SES with structural social capital indicators but not with cognitive social capital indicators. Income interacted with
past year and past month civic participation, indicating that as income increased the effect of civic participation on condom use decreased, with the effect being stronger for past year civic participation. None of the studies reviewed examined the effects of the interactions of SES with social capital on condom use. However, one sub-Saharan African study found that participation in local community groups was positively associated with avoidance of HIV, for young women with secondary education (Gregson et al., 2004). While the literature on the interaction of SES with social capital and its effect on HIV risk behaviors is limited, there is more evidence of the effects of the interaction on other health outcomes. For example, the findings from a Chinese study found a significant interaction between low individual-level perception of reciprocity and social support and poverty, indicating that their combined effect exacerbates self-rated health (Sun et al., 2009). In the Russian context, Rose (2000) found that social capital increased physical and emotional health more than human capital (i.e., subjective social status, age and income), and the combined effects of human and social capital on self-rated health were greater than their independent effects. Moreover, a Swedish study found that economic hardships and the cognitive aspects of social capital - low interpersonal (horizontal) trust and low political/institutional (vertical) trust in parliament- were independently associated with women’s and men’s health for all health outcomes (Ahnquist (2012). The study also found an interaction effect between economic hardships and low social capital (all variables) combined both for women and for men (Ahnquist et al., 2012). When combined, economic hardships and low social capital were associated with a higher risk of poor health than when each was considered alone (Ahnquist et al., 2012).
Limitations of the study. One of the major limitations of this study is that it included a non-random sample. Consequently, the results cannot be considered representative of African American and Latina women and the findings cannot be generalized. Another key limitation of this study is that it used a cross-sectional design and therefore, causal inferences cannot be made.

Secondary data analysis was another limitation of the study. While secondary data analysis is beneficial in terms of convenience, saving time, reducing costs, and making a larger dataset available, it also has a number of disadvantages. One of the major disadvantages of using the GEM study dataset was that questionnaire included questions related to social capital, it was not designed to examine the specific research questions addressed in this study. The measures of social capital included in the survey were derived from two major social capital instruments (SCCBS and World Bank’s SC-IQ) and it is not clear to what extent the items used were pilot-tested to determine their suitability for the population included in the study. Nor is it clear whether the items were adapted based on qualitative research to be more appropriate to the context and experiences of the women included in the study. Moreover, the measurement items included in the survey were more in line with Putnam’s (2000) theory of social capital which emphasizes civic engagement and collective action. While it appears that some of the social and entertainment activities were adapted to be more suitable to the participants, group or organizational memberships that are more specific to women were not included in the items. For example, participation in local community groups or neighborhood associations, support groups, various types of women’s groups, ethnic organizations, or parent groups were not included. The socializing activities were also limited to friends and neighbors and did not include connections with family and extended family members. Although Bourdieu’s theory was integrated in the
conceptual framework for this study, measurements more in line with his conceptualization of social capital as resources accrued through social connections were not included in the GEM study questionnaire.

Another limitation of the study is related to the quality and reliability of the data collected regarding number of male sexual partners, frequency of vaginal, oral, and anal sex, and the frequency of condom use during these types of sex with main and non-main male partners. These data were collected retrospectively, based on self-reports. Hence the quality and accuracy of the data may have been affected by a number of biases. To begin with the study questionnaire was very long (245 pages) and included a range of topics, each with numerous items. The quality and completeness of the data collected may have been influenced by respondent fatigue bias given the length of the questionnaire and the placement of the questions related to number of male sexual partners, and of frequency vaginal, oral, and anal sex with main and non-main sexual partners as well as frequency condom use during these sexual behaviors (from pp. 90-145) (Ben-Nun, 2008). Survey respondents may have become tired and/or bored and answered “don’t know,” “decline to answer,” or “does not apply” more often or chosen answers down the same column of a page (Ben-Nun, 2008).

Social desirability bias may have also played a role in the reports of number of male sexual partners as well as the frequency of various types of sex and condom use. Given the sensitive nature of these questions, some respondents may have been uncomfortable disclosing their sexual activities and may have refused to answer or tended to underreport their number or frequency by giving zero answers (Catania, Gibson, Chitwood, & Coates, 1990). Moreover,
women who perceived oral and/or anal sex or condom use to be socially unacceptable may have tended to underreport these activities (Catania et al., 1990).

Finally, recall bias may have played a role as length of the recall period affects the reliability of reports of sexual risk behaviors. The recall periods for number of male sexual partners and for frequency of sex and of condom use was the past six months. A meta-analysis, examining the test-retest reliability of three recall periods (1, 3, and 6 months) typically used in studies of sexual risk behaviors, found that a 3-month recall period for vaginal and oral sex and a 6-month recall period for number of sex partners produced the most reliable data (Napper, Fisher, Reynolds, & Johnson, 2010). While a recall period of one-month may be too short to report sexual activity especially for individuals who have sex infrequently, a recall their sexual behaviors (Napper et al., 2010). Studies have found that frequency of sexual behavior also affects recall, such that low-frequency sexual acts tend to be over reported, while high frequency sexual acts tend to be underreported (Schroder, Carey, & Vanable, 2003).

**Strengths of the study.** One of the major strengths of this study is that it focused on the relationships between SES, social capital, and consistent condom use among African American and Latina women. While there is extensive literature on the relationships between social capital and health, and the associations of condom use with SES and other demographic variables, there is a paucity of literature on the relationships between social capital, SES, and condom use. Moreover, most of the studies related to social capital and condom use or other HIV-related risk behaviors have been conducted in other countries and do not reflect the social context of African American and Latina women in the United States. Given this situation, this study helps to fill a major gap in the existing literature. Another strength of this study is that a distinction was made
between the cognitive and structural dimensions of social capital and that multiple indicators were used. Finally, the study found significant differences between African American and Latina women in SES that did not reflect uniform patterns and in social capital that were not in the expected directions. It also found that several interactions of SES with structural social capital indicators were significant predictors of condom use.

**Implications of the study.** The findings of this study have a number of implications for theory, future research, practice, and policy development.

**Theory.** This study applied a social determinants of health conceptual framework that is consistent with social work’s person-in-environment perspective. This conceptual framework facilitated the integration of Weber’s theory of social stratification to the conceptualization of SES and of Bourdieu’s and Coleman’s formulations of social capital as resources accrued by individuals through their social networks and social connections. Application of these theories contributed to understanding how SES and social capital are independently associated with women’s HIV-related sexual risk behavior, specifically consistent condom use, Bourdieu’s theory of social capital as a form of capital that is interrelated to other forms of capital (e.g., economic and cultural capital) also contributed to understanding how SES and social capital interact to shape consistent condom use.

**Research.** This study has important implications for future research. First and foremost, the low levels of social capital found among the African American and Latina women included in the study raises questions about the factors that contribute to or detract from the creation of social capital among this population. As noted earlier, several Australian studies have identified a number of factors that contribute to the level of participation of women in civic, social, and
political activities as well as voluntary groups. These factors include income and educational level, employment, being married, perceptions of safety, and knowing one’s neighbors (Baum et al., 2000; Caiazza, 2005; Osborne et al., 2008). Further research on the factors that contribute to the level of social capital among African American and Latina women in the U.S. context may be helpful in understanding the low levels or participation among women found in this study. Since cognitive social capital was not a significant predictor of condom use, it would be important to explore these factors in relation to both the structural and cognitive aspects of social capital using mixed methods.

Future research employing qualitative methods such as focus groups and in-depth individual interviews may help to shed some light on the range of past and current structural social capital (i.e., civic, political, voluntary organization, social, religious engagement, entertainment, communication) activities women participate in and their perceptions of the factors that create barriers to their participation. Such methods may also provide some in-depth understanding of the women’s past and current experiences regarding cognitive social capital (i.e., generalized and particularized trust, perceptions of support and reciprocity of neighbors) and the factors they perceive to contribute to or create barriers to trust, support and reciprocity in their social relations. Data from qualitative analyses may also help to elucidate the types of networks (i.e., horizontal, vertical) and social connections (i.e., family, friends, neighbors, co-workers, colleagues; homogenous or heterogeneous) the women have had in the past and currently have as well as the types of resources (e.g., economic, instrumental and emotional support, access to information and services, norms and effective sanctions) they accrue from such networks or connections that may influence their sexual risk behaviors. Another area for
future research suggested by the findings relates to the effect of increased sociability on condom use. Since increased sociability tended to decrease consistent condom use, it would be useful to explore whether the women who reported going to nightclubs, discos, and bars engaged in alcohol or drug consumption in these venues and whether consumption of such substances influenced condom use with their main male partner. It would also be important to explore the factors in such venues that the women perceive to encourage or discourage condom use during sex with their main male partners. It may also be helpful to use qualitative methods to explore whether increased socializing with friends (having friends over to one’s home or going to a friends’ home) may enforce sexual norms that are not promotive of condom use or may influence women’s knowledge, attitudes, or behaviors regarding condom use with their main male partner.

The findings also suggest further qualitative as well as quantitative research may be useful to better understand how various types of structural social capital (i.e., sociability and civic participation) operate differently to promote or discourage condom use. Further research may also elucidate how the interactions of education with sociability and of income with civic participation operate to increase or decrease consistent condom use.

**Practice.** The study findings raise a number of implications for social work practice regarding the development of structural interventions aimed at building social capital among African American and Latina women at risk for HIV/AIDS. One important implication of the study is that not all types of social capital are health promotive. Therefore efforts to design structural interventions aimed at building social capital need to be based on formative research that attempts to identify the types of social capital that contribute to condom use among the populations and within the social contexts in which the intervention are designed to take place.
Moreover, the findings regarding the interactions of education with sociability and of income with civic participation, suggest that structural interventions aimed at increasing consistent condom use among African American and Latina women need to focus not only on building health promotive social capital but also improving the women’s socioeconomic opportunities and status. Social workers skilled in community development and organization would play a vital role in designing and evaluating such interventions.

**Policy.** The findings from this study suggest the need for policies targeting funding for additional social work research aimed at enhancing understanding of the dynamics of the relationships between SES and social capital as key social determinants of health and their effect on risk and protective factors for sexually transmitted HIV infection among women, especially African Americans and Latinas. In addition, the findings regarding the interactions of SES and social capital suggest that comprehensive strategies should be developed to integrate efforts to build social capital in ethnic and racial minority communities with economic development and human capital development.

**Conclusions**

This investigation examined the relationship of two key social determinants of health; SES and social capital to HIV-related sexual risk behavior among African American and Latina women. The study found partial support for the hypothesis that African American would be higher in SES, lower in cognitive social capital, higher in structural social capital, and higher in frequency of unprotected sex than Latina women. Partial support was also found for the hypothesis that SES, cognitive social capital and structural social capital would each be inversely associated with unprotected sex. The findings partially supported this hypothesis as one
indicator of SES, income was inversely associated with unprotected sex, but one indicator of structural social capital, past month sociability were positively associated with unprotected sex. This finding indicated that not all social capital is health promotive. Moreover, the study found partial support for the hypothesis of a significant interaction effect of SES with cognitive social capital and of SES with structural social capital HIV-related sexual risk behavior among African American and Latina women. The hypothesis was supported for the interaction of SES with indicators of structural social capital but not for the interaction of SES with indicators of cognitive social capital. Specifically significant interactions were found for educational attainment with past month sociability and for income with past year and with past month civic participation.

Although not hypothesized, the findings indicate that age was positively and that relationship status with the main male partner was negatively associated with consistent condom use among the women in the study. The direction of the association of age with consistent condom use was not in accord with the findings of previous studies, as older women were more likely than younger to engage in consistent condom use during vaginal sex with their main male partner. However, the direction of the association of relationship status with consistent condom use concurred with the findings of previous studies, as women who were married or living with their main male partner were less likely than single women or those not living with their main male partner to use condoms every time they had vaginal sex with that partner.

The study contributed to the extant literature on the associations of SES and social capital with women’s sexual risk for HIV infection, and to the scant literature on the interactive effects of SES and social capital on women’s sexual risk. It also added to the limited research on the
independent and interactive effects of SES and social capital on the sexual risk for HIV infection among African American and Latina women in the United States. Further research using a mix of qualitative and quantitative methods may help to elucidate the factors that contribute to the low level of social capital found among African American and Latina women, the mechanisms by which sociability affects sexual risk, as well as how the interactions of education with sociability and of income with civic participation operate to affect women’s sexual risk for HIV infection. The study also has implications for the role of social workers in developing structural interventions that integrate building social capital among women in racial and ethnic minority communities with economic and human capital development in those communities. Moreover, policies aimed at reducing the HIV/AIDS disparities experienced by African American and Latina women should also consider integrating the creation of social, economic, and human capital among these women.
Table A1

Factor Loadings for Principal Components Analysis with Varimax Rotation of Neighborhood Social Capital Variables: Two Component Solution

<table>
<thead>
<tr>
<th>Item</th>
<th>Component 1</th>
<th>Component 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Suppose something unfortunate happened to someone in your neighborhood, such as a serious illness, or the death of a parent. How likely is it that people in the neighborhood would get together to help them?</td>
<td>.880</td>
<td>-.049</td>
</tr>
<tr>
<td>Suppose something unfortunate happened to you, such as a serious illness or some other short-term crisis. How likely is it that people in the neighborhood would get together to help you?</td>
<td>.877</td>
<td>-.044</td>
</tr>
<tr>
<td>How strong is the feeling of togetherness or closeness in your neighborhood?</td>
<td>.820</td>
<td>.157</td>
</tr>
<tr>
<td>Most people in this neighborhood are willing to help if you need it.</td>
<td>.607</td>
<td>.394</td>
</tr>
<tr>
<td>In this neighborhood, one has to be alert or someone is likely to take advantage of you.</td>
<td>-.139</td>
<td>.752</td>
</tr>
<tr>
<td>Generally speaking, would you say that most people can be trusted or that you can't be too careful in dealing with people?</td>
<td>.128</td>
<td>.693</td>
</tr>
<tr>
<td>Most people who live in this neighborhood can be trusted.</td>
<td>.352</td>
<td>.680</td>
</tr>
<tr>
<td>In this neighborhood, people generally do not trust each other in matters of lending and borrowing money.</td>
<td>.017</td>
<td>.535</td>
</tr>
<tr>
<td>Eigenvalues</td>
<td>3.01</td>
<td>1.72</td>
</tr>
<tr>
<td>% of variance</td>
<td>37.58</td>
<td>21.45</td>
</tr>
</tbody>
</table>
Table A2
Factor Loadings for Principal Components Analysis with Varimax Rotation of Past Year Social Capital Variables

<table>
<thead>
<tr>
<th>Item</th>
<th>Component 1</th>
<th>Component 2</th>
<th>Component 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Made a speech</td>
<td>.710</td>
<td>.146</td>
<td>-.027</td>
</tr>
<tr>
<td>Wrote an article for a magazine or newspaper</td>
<td>.642</td>
<td>.024</td>
<td>.241</td>
</tr>
<tr>
<td>Served as an officer of some club or organization</td>
<td>.608</td>
<td>.346</td>
<td>.099</td>
</tr>
<tr>
<td>Served on a committee for some local organization</td>
<td>.580</td>
<td>.339</td>
<td>.035</td>
</tr>
<tr>
<td>Was a member of a &quot;better government&quot; group</td>
<td>.571</td>
<td>.045</td>
<td>-.343</td>
</tr>
<tr>
<td>Signed a petition</td>
<td>.015</td>
<td><strong>.688</strong></td>
<td>-.029</td>
</tr>
<tr>
<td>Wrote to congress or the senate</td>
<td>.077</td>
<td><strong>.663</strong></td>
<td>-.264</td>
</tr>
<tr>
<td>Wrote a letter or e-mail to the paper</td>
<td>.172</td>
<td><strong>.609</strong></td>
<td>.129</td>
</tr>
<tr>
<td>Attended a political rally or speech</td>
<td>.386</td>
<td><strong>.542</strong></td>
<td>.034</td>
</tr>
<tr>
<td>Attended a public meeting on town or school affairs</td>
<td>.289</td>
<td><strong>.432</strong></td>
<td>.155</td>
</tr>
<tr>
<td>Held or ran for political office</td>
<td>.183</td>
<td>.102</td>
<td><strong>.776</strong></td>
</tr>
<tr>
<td>Worked for a political party or a political campaign</td>
<td>.465</td>
<td>.180</td>
<td><strong>-.477</strong></td>
</tr>
<tr>
<td>Eigenvalues</td>
<td>3.44</td>
<td>1.13</td>
<td>1.09</td>
</tr>
<tr>
<td>% of variance</td>
<td>28.64</td>
<td>9.42</td>
<td>9.11</td>
</tr>
</tbody>
</table>
Table A3

*Factor Loadings for Principal Components Analysis with Varimax Rotation of Past Month Social Capital Variables: Two Component Solution*

<table>
<thead>
<tr>
<th>Item</th>
<th>Component 1</th>
<th>Component 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Went to a night club, disco, bar</td>
<td>.690</td>
<td>-.018</td>
</tr>
<tr>
<td>Went to friends' house for dinner or evening</td>
<td>.690</td>
<td>.070</td>
</tr>
<tr>
<td>Had friends in for dinner or evening</td>
<td>.651</td>
<td>.111</td>
</tr>
<tr>
<td>Went to dinner at restaurant</td>
<td>.617</td>
<td>.049</td>
</tr>
<tr>
<td>Went to the theater, opera, concerts</td>
<td>.509</td>
<td>.321</td>
</tr>
<tr>
<td>Did volunteer work</td>
<td>.042</td>
<td>.681</td>
</tr>
<tr>
<td>Went to a meeting of a club or civic organization</td>
<td>.116</td>
<td>.654</td>
</tr>
<tr>
<td>Went to a church social function</td>
<td>.011</td>
<td>.631</td>
</tr>
<tr>
<td>Made a contribution to charity</td>
<td>.131</td>
<td>.589</td>
</tr>
<tr>
<td>Eigenvalues</td>
<td>2.42</td>
<td>1.39</td>
</tr>
<tr>
<td>% of variance</td>
<td>26.84</td>
<td>15.49</td>
</tr>
<tr>
<td>Item</td>
<td>Component</td>
<td></td>
</tr>
<tr>
<td>---------------------------------------------------</td>
<td>-----------</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wrote a personal letter or e-mail</td>
<td>.752</td>
<td></td>
</tr>
<tr>
<td>received a personal letter or e-mail</td>
<td>.751</td>
<td></td>
</tr>
<tr>
<td>discussed politics</td>
<td>.635</td>
<td></td>
</tr>
<tr>
<td>made a personal long distance call</td>
<td>.579</td>
<td></td>
</tr>
<tr>
<td>read a book</td>
<td>.573</td>
<td></td>
</tr>
<tr>
<td>went to a club, disco, bar or place of entertainment</td>
<td>.115</td>
<td></td>
</tr>
<tr>
<td>had dinner in a restaurant</td>
<td>.185</td>
<td></td>
</tr>
<tr>
<td>saw a movie</td>
<td>.068</td>
<td></td>
</tr>
<tr>
<td>had friends in for the evening</td>
<td>.161</td>
<td></td>
</tr>
<tr>
<td>eigenvalues</td>
<td>2.87</td>
<td></td>
</tr>
<tr>
<td>% of variance</td>
<td>31.88</td>
<td></td>
</tr>
</tbody>
</table>
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