SPIRITUALITY, RELIGIOSITY, AND ALCOHOLISM TREATMENT OUTCOMES:
A COMPARISON BETWEEN BLACK AND WHITE PARTICIPANTS

by

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Submitted in partial fulfillment of the requirements
for the degree of Doctor of Philosophy

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May, 2008
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Dedication

“Statistics represent people with the tears wiped off.”

Kerr L. White--physician, professor, health statistician, scholar—whose work emphasized the psychosocial factors of illness--attributed this quote to Sir Austin Bradford Hill, a statistician whose research helped link cigarette smoking to lung cancer.

My sister Linda Krentzman always told me she loved New York City because when she looked out of her apartment window at night and saw thousands of illuminated windows, she loved thinking that each window represented a person, a human life, a family.

This quote helps us to remember that each cell of our statistical analysis package similarly represents a human life, and a family, who in this study, were deeply affected by alcoholism.

This study is dedicated to the project MATCH participants, their families, and all the families and individuals everywhere who have had occasion to wipe off the tears caused by alcoholism.
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Acknowledgements

I thank the faculty, staff, and administration of the Mandel School of Applied Social Sciences at Case Western Reserve University for nurturing me through this doctoral program and providing me with one of the richest and most rewarding experiences of my life.

Special thanks to my dissertation advisor, Dr. Kathleen Farkas, and to my committee members, Drs. Alice Bach, Aloen Townsend, and David Miller. I am honored to have had your kind and generous assistance with this project. Your contributions were enormously helpful and I learned a great deal from them.

Four statisticians provided instruction, consultation, and inspiration. I thank Drs. Elizabeth Kudadjie-Gyamfi, of Long Island University’s Brooklyn Campus, Meeyoung Oh Min and Aloen Townsend, of Case Western Reserve University, and Juan Battle, of the City University of New York, for showing me that working with data was exciting and suspenseful. I learned so much from, and enjoyed, our work together.

Three original researchers from Project MATCH were extremely helpful to me. Drs. Bob Stout, Scott Tonigan, and Allen Zweben each provided essential information at critical points throughout this work.

I thank my employer, Long Island University—Brooklyn Campus. Members of the Social Science Division and the Social Work Department encouraged me and made pivotal contributions. These friends and colleagues are Joram Warmund, Kimberly Jones, Gary Kose, Hildi Hendrickson, Jan Rosenberg, Yusuf Juwayeyi, Elizabeth Kudadjie-Gyamfi, Jessica Rosenberg, Susanna Jones, Iris Mulé, Amandia Speakes-Lewis, Kevin Gabrielli, Rhianon Allen and Francine Conway.

Special thanks to Dr. Samuel C. Jones for your encouragement and faith in me from the start. This simply would not have been possible without your understanding and generosity.

I thank my family, Paul Krentzman, Linda Krentzman, Ellen Krentzman Schuster and Richard Schuster for the excitement and happiness you expressed throughout my pursuit of this degree.

My Mother, Sylvia Hannah Krentzman, began this journey with me but passed away during the spring of 2004. Growing up I watched her tackle big jobs—taxes, financial aid applications, household finances, the checkbook. If I hadn’t spent my childhood watching a powerful woman sit patiently at the dining room table and calculate figures aloud until the job got done, I wouldn’t have the first idea how to begin, persist, and finish a project like this one.
Dear friends, thank you for your love and support: Stacey Barker, Caitlin Barton-Landfield, Kerry Beldin, Lisa Birzen, Vince Buchanan, Nancy Cavagnaro, Arleen Craft, Ivone Garcia Franco, Jose Franco, Olivia Paloma Franco, Bob Herman-Smith, John Hill, Ruthie Honick, David Honick, Deborah Hrouda, Molly Irwin, Shiri Katz, Amy Kesegich, Kai Li, Toby Martin, James McLaughlin, Bertram Miller, Barbara Moore, Maureen Mullin, Radhika Philip, Kathy Plotkin, Erica Reddick, Gail Roberts, Limor Schafman, Barbara Selz, Tracy Turner, Leah Weich, and Zoe Breen Wood.

To the students I taught and the students I supervised during these years, I am grateful to you for listening to my progress and providing me with good ideas and encouragement. I have been lucky to have worked with you.

I thank the Project MATCH Research Group for their work and for making their data available to me.

From the Project MATCH agreement:

The author acknowledges that the reported results are, in whole or in part, based on analyses of the Project MATCH Public Data Set. These data were collected as part of a multisite clinical trial of alcoholism treatment supported by a series of grants from the National Institute on Alcohol Abuse and Alcoholism and made available to the author by the Project MATCH Research Group. This dissertation has not been reviewed or endorsed by the Project MATCH Research Group and does not necessarily represent the opinions of its members, who are not responsible for the contents.

This dissertation was supported in part by a grant from the National Association of Social Workers Foundation: The Jane B. Aron Doctoral Fellowship.
Spirituality, Religiosity, and Alcoholism Treatment Outcomes:  
A Comparison between Black and White Participants

Abstract

by

AMY R. KRENTZMAN

This study examines race as a moderating variable for the relationship between spirituality/religiosity and favorable drinking outcomes in an alcoholism treatment trial. A subset of the Project MATCH Public Use Data Set was used to explore this question (N=414). Three hundred twenty-four participants were white and 90 were black. Graphic depiction of data and binary logistic regression were used to test the moderation hypotheses. Graphic depiction of the data revealed purpose in life (the measure of spirituality) increased and religiosity decreased for both blacks and whites over time. Blacks had higher scores in purpose in life and religiosity than whites at all time points. Those whose purpose in life and religiosity increased over time achieved better drinking outcomes. The outcome variable for the binary logistic regression was a dichotomous variable indicating whether participants had achieved six months continuous sobriety or not. The binary logistic regression was first run with a set of covariates including education, race, site, baseline religiosity, baseline purpose in life, religiosity at month 15, purpose in life at month 15, and baseline drinking. This model showed that for every one-unit increase in 15 month religiosity, black and white participants were 1.067 times (6.7%) more likely to get sober. For every one-unit increase in 15 month purpose in life, black and white participants were 1.039 times (3.9%) more likely to get sober. In a
second model, the interaction effect for race by purpose in life at month 15 was entered to test the moderation hypothesis. The interaction term was statistically significant at \( p = .049 \) (odds ratio 1.044) indicating that for every one-unit increase in 15 month purpose in life, blacks were 4.4% more likely to get sober than whites. The second model was then run to test the interaction between race and religiosity. This interaction term was not significant indicating race does not moderate the relationship between 15 month religiosity and sobriety. Implications for policy, practice, and future research are discussed.
Chapter 1: Background

Introduction

This study addresses an unexplained finding in the alcoholism research field. In alcoholism treatment studies, black and white participants have health and socioeconomic disparities at intake (e.g., blacks have lower education, more unemployment, lower-paying jobs, more coexisting drug use, higher drinking intensity) indicating blacks may be vulnerable to poorer outcomes. However, both groups achieve equivalent drinking outcomes at follow-up. Researchers have been perplexed by these findings, replicated in four alcoholism treatment studies funded by the National Institute of Alcohol Abuse and Alcoholism [NIAAA] (Lowman & Le Fauve, 2003). McCay, Lynch, Pettinati, and Shepard (2003) suggest blacks recover from alcoholism via different pathways than whites, but no one knows precisely how. Differences in motivation, treatment alliance, and social support are thought to offer possible explanations (Brower & Carey, 2003). Researchers recommend future studies explore “possible differences in process, or mediational, effects … as they could provide insight into ways to improve treatment for blacks” (McKay et al., p. 1323). This study explores one possible meditational effect. It uses a strengths-based framework to recognize spirituality and religiosity as strengths in the African American community. This study hypothesizes race is a moderator of the relationship between religiosity and alcoholism treatment outcomes, and hypothesizes race is a moderator of the relationship between spirituality and alcoholism treatment outcomes; it hypothesizes religiosity/spirituality operate differently—more advantageously—in blacks compared to whites.
Many authors recognize the central role of spirituality and religion in African American culture (Bridges, 2001; Lincoln & Mamiya, 1990; Murphy, Melton, & Ward, 1993; Stewart, 1997). On measures of spirituality and religiosity, researchers overwhelmingly report black participants score significantly higher than whites (Heisel & Faulkner, 1982; Levin, Taylor, & Chatters, 1994; Taylor, Chatters, Jakody, & Levin, 1996). Spirituality has been found to be a protective factor in health and psychosocial research. It is associated with better health and well being outcomes in the general population (Kendler, Gardner, & Prescott, 1997; Koenig et al., 1992; Pressman, Lyons, Larson, & Strain, 1990) and among African Americans specifically (Bowen-Reid & Harrell, 2002; Brome, Owens, Allen, & Vevaina, 2000; Christian & Barbarin, 2001). It is timely to focus on strengths in the African American community that may account for equivalent alcoholism treatment outcomes despite disparities at intake. This is the first study to explore race as a moderator of the relationship between spirituality and religiosity and alcoholism treatment outcomes.

This study sits at the crossroads of several pressing social problems: alcoholism, racism, discrimination, oppression, and health disparities. Alcohol abuse is responsible for the loss of 100,000 lives each year and $184.6 billion in lost productivity, alcoholism treatment, medical expenses, and losses due to premature death (NIAAA, 1991, January; U.S. Department of Health and Human Services, 2000). Alcoholism has far-reaching social implications; it devastates families and undermines the healthy development of children. These consequences are particularly severe in the black community due to health disparities, described below.
Racism, discrimination, and oppression continue to deny individuals equal access to health and prosperity. Examples from various aspects of life support this assertion. Hispanic and African American applicants for home mortgages face an 80% greater likelihood of being denied compared with whites with identical creditworthiness, income, and credit ratings (Smedley, Stith, & Nelson, 2003). Racial inequalities in the area of criminal justice are striking: “Even when people of color and whites have similar circumstances, African Americans and Latinos are more likely to be subjected to racial profiling, arrest, prosecutorial discretion, receipt of jail over bail, higher bails for similar charges, worse proposals in plea bargaining, longer sentences and disproportionate receipt of the death penalty” (Annie Casey Foundation, 2006). The repercussions of these disparities disproportionately penalize families, neighborhoods, and communities of color.

Health disparities also represent striking social inequalities: rates of infant mortality are 2.5 times higher for blacks than whites, black women are twice as likely to die of cervical cancer than white women, heart diseases are 29% more prevalent among blacks than whites, and disparities of this nature also exist with diabetes, AIDS/HIV, hepatitis, and syphilis (Office of Minority Health, 2007, January 25). In the field of alcoholism, blacks have higher rates of cirrhosis mortality than whites (Caetano, 2003; Galavan & Caetano, 2003), blacks are more likely to have a coexisting drug dependence than either white or Hispanic alcoholics (Caetano, 2003), and black infants are seven times more likely to be born with Fetal Alcohol Syndrome than white infants (NIAAA, 1994, January), despite higher alcohol abstinence rates among black women.
Given the costs to society of alcohol abuse, and the egregious disparities in many areas of society that persist to this day, it is timely to conduct a study that addresses health disparities and alcoholism. The timeliness of the project, the importance of the issues it addresses, its strengths-based approach, and its methodological potency suggest its findings will inform practice, policy, and future research.

Definitions

Before continuing with the introduction to this study, it is important to define key concepts. These concepts are spirituality, religiosity, race, ethnicity, alcoholism, racism, discrimination, and oppression.

Social scientists have had difficulty defining spirituality and religiosity. In 2004, Cook published a landmark literature review on addiction and spirituality. Seeking definitive definitions for spirituality and religiosity, Cook conducted a comprehensive review of publications on spirituality and addiction published in the English language over the past 25 years. He found 265 publications that met his search criteria and explored the varying ways in which the terms are defined in these studies.

Starting with spirituality, he found there to be a lack of clear definition of the construct, even as interest in it increased. In one third of the studies, definition was not even attempted, nor was there a discussion of the difficulties in defining the term. In one fifth of the studies, writers “did not appear to be writing from the perspective of any easily identifiable approach to spirituality” (p. 547). He also noticed a mismatch between definitions of the term and the concepts tapped in the questionnaires designed to measure it. He concludes:
Given the diverse, confusing and conflicting conceptualizations identified in this study, as well as the poor correspondence between these conceptual components of spirituality and the research methodology used to study spirituality in practice, it is eminently arguable that the best way forward would be to dispense with the concept of spirituality altogether—at least so far as scientific work is concerned (p. 547).

Further, he evaluates various definitions of spirituality as it is defined in counterpoint to religiosity in these studies. His findings here are equally ambiguous. Some define the two as synonymous; others as mutually exclusive.

The current study builds on the work of the National Institute on Aging/Fetzer Working Group (Idler et al., 2003) and the work of Pargament (1997) to define the terms. Both Idler et al. and Pargament consider the two terms as embodied within a larger, overarching construct. Idler et al. conceptualized religiosity and spirituality collectively as a single construct with 10 domains. Their definition of the construct is “inclusive of both traditional religiousness and noninstitutionally based spirituality” (Idler et al., 2003, p. 327). Pargament defines “religious coping” (discussed in Chapter 2) as broad and comprehensive including ideas from spirituality and religiosity. He defines religious coping as “both institutional religious expressions and personal religious expressions, such as feelings of spirituality, beliefs about the sacred, and religious practices” (p. 4).

This study builds on the Fetzer Working Group’s definition of spirituality (Idler et al., 2003) and Pargament’s (1997) idea that religiosity and spirituality form a singular construct with multiple dimensions. Idler et al. identify ten dimensions: history of having had a religious or spiritual experience, public religious practices, private religious
practices, social support from the congregation, using spirituality to cope, beliefs and values, commitment to religious practice, forgiveness, spiritual experiences, and religious intensity (pp. 336-338). This study concurs that spirituality/religiosity is a single, but multidimensional, term. It explores two of the many possible dimensions of the construct. These two dimensions are “purpose in life” which serves as a proxy for spirituality in this study, and “religious behaviors and practices” connoting religiosity.

Cook (2004), upon conclusion of his comprehensive search for a definition of spirituality, ultimately conceptualized it as follows:

Spirituality is a distinctive, potentially creative and universal dimension of human experience arising both within the inner subjective awareness of individuals and within communities, social groups and traditions. It may be experienced as relationship with that which is intimately ‘inner,’ immanent and personal, within the self and others, and/or as relationship with that which is wholly ‘other,’ transcendent and beyond the self. It is experienced as being of fundamental or ultimate importance and is thus concerned with matters of meaning and purpose in life, truth and values (pp. 548-549).

Within this definition, several possible dimensions can be identified, such as inner, personal relationship; outer, transcendent relationship; and meaning and purpose in life. Put more generally, for the purposes of this study, spirituality is defined as noninstitutionally-based sensations and experiences associated with a connection to a higher power or other force greater than one’s self. This study recognizes one dimension of spirituality as the idea of purpose in life. Victor Frankl’s logotherapy addresses the sustaining and motivating nature of having a higher, overarching purpose in life (Frankl,
This purpose in life is defined moment by moment and is characterized as self-transcendence, self-forgetting, and connection with forces outside the self, whether those forces are fulfilling one’s higher purpose, or simply connecting with another human being. Frankl writes,

By declaring that man is responsible and must actualize the potential meaning in his life, I wish to stress that the true meaning of life is to be discovered in the world rather than within man or his own psyche, as though it were a closed system. I have termed this constitutive characteristic “the self-transcendence of human existence.” It denotes the fact that being human always points, and is directed, to something, or someone, other than oneself—be it a meaning to fulfill or another human being to encounter. The more one forgets himself—by giving himself to a cause to serve or another person to love—the more human he is and the more he actualizes himself. What is called self-actualization is not an attainable aim at all, for the simple reason that the more one would strive for it, the more he would miss it. In other words, self-actualization is possible only as a side effect of self-transcendence (Frankl, 1984, p. 115).

Frankl, himself a survivor of the Nazi concentration camps, articulates that even in the death camps, individuals had a way of transcending their nightmarish circumstances by holding fast to the idea of their life’s ultimate purpose. Frankl’s purpose in life is the dimension of spirituality measured in this study. Purpose in life is used in this study as a proxy for spirituality generally.

Krause identifies noted scholars Clark (1958), Pargament (1997), and Berger (1990) as supporters of the idea that religion offers a framework for finding meaning in
life. Krause’s (2003) study of race, religion, and abstinence from alcohol in later life provides empirical evidence of the construct’s relationship to drinking behavior. He found that older adults who found meaning in religion were more likely to avoid drinking. Therefore there is theoretical and empirical evidence for connections between spiritual and religious constructs, purpose in life, and drinking behavior. More evidence is described in the literature review in Chapter 2.

Social scientists also find religiosity difficult to define. In *Eight Theories of Religion*, Pals (2006) differentiates between substantive and functional definitions of religion. A theorist using a substantive approach would define religion “in terms of the beliefs or the ideas that religious people commit to and find important” (p. 13). A theorist using a functional approach would define religion “solely in terms of how it operates in human life…as that which brings a sense of comfort or well-being to an individual or provides support for a group” (p. 13). In this study, religiosity is defined nondenominationally as those public and private practices traditionally associated with institutional worship. These include attending services, prayer, meditation, reading scripture, and other similar activities.

*Race* is widely understood by scientists as socially and culturally defined (Begley, 1995; Cornell & Hartmann, 1998; van den Berghe, 1967); there is no biological basis to conceptualizations of racial categories. For example, if one categorizes people genetically based on the two forms of hemoglobin, or according to the presence or absence of epicanthic eye folds, the resulting groups form meaningless cross-national categories (Begley, 1995). However, it is widely agreed that race carries powerful social,
political, and economic implications (Cornell & Hartmann, 1998; van den Berghe, 1967).

In this study, *race* is defined as

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. Determining which characteristics constitute markers and therefore the construction of the racial category itself—is a choice human beings make. Neither markers nor categories are predetermined by any biological factors (Cornell & Hartmann, 1998, p. 24).

*Ethnicity* is differentiated by social scientists from race, but the terms are sometimes overlapping and sometimes inclusive: a certain race of people may also meet the definition for being an ethnic group, but this is not always the case (Cornell & Hartmann, 1998). Ethnicity emphasizes the ideas of common ancestry, shared history, and shared culture more than race does, and ethnicity is seen to be less politically charged and less susceptible to power struggles than race is (Cornell & Hartmann, 1998).

Therefore, *ethnicity* is defined in this study 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” (Schachter, 1978, p. 12).

In this study, a comparison was made between black and white participants in the Project MATCH alcoholism trial. Given the above definitions of race and ethnicity, this study explored differences of race. White Project MATCH participants could have been Irish, Italian, Polish, Jewish, or other ethnic categories. Black Project MATCH
participants could have been Jamaicans, Haitians, Trinidadian, Senegalese, Nigerian, Caribbean Brits, or other ethnic categories. Cornell and Hartmann (1998) argue that among blacks in North America, because of a shared history of racism and discrimination, a “sense of peoplehood arose across diverse origins” suggesting black North Americans could be considered both a race and an ethnic group. This shared sense of peoplehood would lead to the shared meaning of religiosity and spirituality among African Americans that is central to this study. Data on participants’ ethnicities was not collected by Project MATCH; therefore, analysis by ethnicity is not possible. This study recognizes heterogeneity within the white and black samples, but considers African Americans generally to be a group with religious and spiritual strengths. This is discussed below in the section of this chapter entitled, “African American Religion and Spirituality.”

Alcoholism is defined as a “chronic condition characterized by impaired control over drinking, increased tolerance to the effects of alcohol, a physical withdrawal state (when alcohol consumption is stopped or reduced), and a learned preference for alcohol over almost every other rewarding activity in a person’s life” (Allen, Babor, Mattson, & Kadden, 2003, p. 5). In this study, alcoholism is synonymous with problem drinking, alcohol abuse, and alcohol dependence. Project MATCH participants, in order to meet inclusion criteria for the study, must have met the criteria for a diagnosis of alcohol abuse or alcohol dependence. Project MATCH researchers used the 1987 edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-III-R) (American Psychiatric Association, 1987) for their definition for alcohol dependence and alcohol abuse. These are operationalized in the DSM-III-R as “psychoactive substance
dependence” and “psychoactive substance abuse” where the psychoactive substance is alcohol. For the DSM-III-R diagnostic criteria for psychoactive substance dependence and psychoactive substance abuse, see Appendix A.

*Racism* in this study is defined as:

any set of beliefs that organic, genetically transmitted differences (whether real or imagined) between human groups are intrinsically associated with the presence or the absence of certain socially relevant abilities or characteristics, hence that such differences are a legitimate basis of invidious distinctions between groups socially defined as races (van den Berghe, 1967, p. 11).

*Discrimination* in this study is defined as “actions or practices carried out by members of dominant groups, or their representatives, which have a differential and negative impact on members of subordinate groups” (Feagin & Feagin, 1978, pp. 20-21). Discrimination can be overt or covert, intentional or unintentional. It can be committed or practiced by individuals, groups, institutions, or organizations.

*Oppression* is defined as the relationship of domination between groups consisting of “the systematic devaluing of the attributes and contributions of those deemed inferior, and their exclusion from the social resources available to those in the dominant group” (Dominelli, 2002, p. 8). Included in this definition is the idea that “those in the dominant group seek to deny agency to those whom they deem inferior” (p. 8).

Scope of the Problem

The inspiration for this study came from a report on race and alcoholism written by Lowman and Le Fauve in 2003. The report describes a request made by the National Institute on Alcohol Abuse and Alcoholism (NIAAA) to four of its grantees to perform
secondary data analyses to explore issues of race and health disparities (Lowman & Le Fauve, 2003). Each of the four studies is in and of itself impressive in its scale, methodology, and objectives. A brief review of each study follows.

The first study (Brower & Carey, 2003) surveyed 174 alcohol-dependent individuals who were outpatients at a Midwestern addiction treatment facility. Participants were measured at baseline and at follow-up 6 to 12 months later. Thirty-eight participants were black and 136 were white. At baseline and follow-up, the following psychosocial factors were measured: physical and mental health functioning, psychiatric severity, demographics, family history, alcohol consumption, severity of substance dependence, social support for sobriety, and lifetime psychiatric diagnoses. Participants were non-randomly assigned to one of two intensive outpatient treatment programs or one regular outpatient treatment program. Assignment was based on treatment needs, patient preferences, and insurance coverage. The study followed participants over time to see how their drinking changed during and after treatment. Comparative results by treatment group were not reported; rather, results for participants in all treatment groups collectively were reported. Participants experienced a reduction in the number of days they drank and a reduction in drinks per drinking day when baseline and follow-up scores were compared. “The study's original intent was to document that patients … were improving during and after treatment, and to try to identify predictors of outcome” (K. Brower, personal communication, March 27, 2007).

The second study (McKay, et al., 2003) focused on the effectiveness of aftercare treatment. Participants first completed a one-month intensive outpatient treatment program in the community and then were randomized into one of three aftercare
treatments: twelve-step-based group counseling, relapse prevention, and telephone monitoring and counseling. Researchers surveyed 187 participants who met the criteria for alcohol or cocaine dependence. One hundred thirty-seven participants were black, 50 were white. Outcomes were measured at 3, 6, 9, and 12 months following aftercare. Follow-up rates were 90% or better at each time point. The following psychosocial factors were measured: demographics, lifetime substance use and treatment, current problem severity, and substance use diagnoses. No one form of continuing care treatment outperformed the others in terms of drinking outcomes; however, individuals receiving telephone counseling fared somewhat better although not significantly better than those who received face-to-face treatment.

The third study (Morgenstern & Bux, 2003) surveyed 252 drug and/or alcohol abusers who were patients in two community-based substance abuse treatment programs in central New Jersey or who were members of the general community. One hundred twenty-seven participants were black, 92 were white. Participants were randomly assigned to one of three treatments: high-standardization cognitive-behavioral treatment, which involved high fidelity to a CBT treatment model, low standardization cognitive-behavioral treatment, which involved some fidelity to the CBT treatment model and other interventions per therapist discretion, and treatment as usual, which involved the deliberate exclusion of CBT interventions (Morgenstern, Blanchard, Morgan, Labouvie, & Hayaki, 2001). Participants were assessed at intake and at two follow-up points: at 13 weeks (just following treatment completion) and at 9 months (6 months after treatment completion) (Morgenstern et al., 2001). The following psychosocial factors were measured: demographics, alcohol and drug use, alcohol- and drug-related consequences,
alcohol and drug problem severity, severity of psychiatric and legal problems, motivation to enter treatment, involvement in twelve-step groups, and perception of therapeutic alliance with substance abuse treatment professionals. There were no significant differences in outcomes across conditions (Morgenstern et al., 2001).

The fourth study was a secondary analysis of Project MATCH data (Tonigan, 2003). Details of the original Project MATCH study are provided in the methodology chapter of this dissertation (chapter 4). Briefly, Project MATCH was a randomized control trial in which 1726 individuals with primary alcohol dependence or abuse diagnoses were randomly assigned to one of three treatment types: cognitive-behavioral coping skills therapy, twelve-step facilitation therapy, or motivational enhancement therapy. Nine hundred fifty-two participants participated in the study as outpatient clients; 774 participated as aftercare clients having completed a three-week intensive inpatient treatment experience immediately preceding study participation. The original hypotheses proposed clients exhibiting certain biopsychosocial features at intake would fare better if “matched” to certain types of treatment. Participants were recruited from 11 sites across the U.S. One hundred sixty-eight participants were black, 1,380 were white. Participants were assessed at intake, at the conclusion of treatment three months later, and at three month intervals for 12 months after treatment. The following factors were measured: demographics, clinical history, personality, treatment history, service utilization, alcohol consequences, drinking behavior, other substance use, psychosocial functioning, psychiatric disorders, neuropsychological functioning, attitudinal, motivational, and existential factors (readiness for change, abstinence self-efficacy, purpose in life, religiosity, and motivation for change), and social support (Project
MATCH Research Group, 1993). Ultimately, no support was found for the matching hypotheses; that is, patient characteristics did not predict increased success with certain therapies. All participants fared equally well regardless of form of treatment (Project MATCH Research Group, 1997).

Authors of each of these four studies were asked to examine their outcomes by race, with specific focus on health disparities at intake and the comparative outcomes of black and white participants.

In each case it was found that whites and blacks had equivalent outcomes as evidenced by equivalent levels of drinking frequency and intensity; that is, treatment was equally effective for blacks and whites (Brower & Carey, 2003; Lowman & Le Fauve, 2003; McCay et al., 2003; Morgenstern & Bux, 2003; Tonigan, 2003). This was true despite health and socio-economic disparities at intake that suggested blacks were more vulnerable than whites. For example, Brower and Carey (2003) report many statistically significant differences between their black and white participants. (Note that in their study, black participants numbered 38 and white participants numbered 136). Compared with whites, fewer blacks were married (21.1% compared with 39.7%), fewer blacks were employed (44.7% compared with 79.4%), blacks had lower yearly incomes ($19,446 compared with $51,206), less education (11.8 years compared with 13.8 years), more prevalent family histories of substance abuse (71.1% of blacks and 41.2% of whites had family histories), more previous treatment episodes (31.6% of blacks had more than two previous treatment episodes compared to 15.4% of whites), more substance dependence severity, more incidence of history of cocaine disorders (38.2% of blacks compared to 10.7% of whites), worse physical health, a higher likelihood of diagnosis of
antisocial personality disorder (26.5% of blacks had this diagnosis compared with 9.8% of whites), and a higher likelihood of diagnosis of generalized anxiety disorder (32.4% compared to 15.5%). Further, blacks in this study received less treatment. They had fewer treatment visits (14.4 days compared with 21.0 days) and experienced fewer overall treatment hours (38.9 compared with 59.7) over the course of the intervention. These differences were all statistically significant. There was no difference in age, gender, substance abuse severity, drinking frequency, marijuana use, psychiatric severity, or diagnoses of major depression, manic episodes, panic disorders, posttraumatic stress disorder, or social phobias.

There were two variables in which black participants fared better than white participants: blacks had higher levels of social support for abstinence (scoring 11.1 compared to 8.2 on a measure that ranged from 3-24) and better rates of study retention.

In the aftercare study conducted by McKay et al. (2003), of 21 baseline measures, 9 statistically significant differences comparing black and white participants are reported. Blacks had fewer years of education (11.76 compared with 13.10), higher rates of unemployment, more years of cocaine use (9.57 compared with 5.22) including higher likelihood of lifetime and current cocaine dependence disorders. Black participants were more likely to be living with an alcoholic (15.2% compared with 2.0%) or living with a drug addict (11.6% versus 2.0%). Comparative strengths among black participants included lower legal and psychiatric problem severity than whites. Blacks and whites had no difference on the number of continuing care sessions attended.

In the study by Morgenstern and Bux (2003) similar baseline disparities were reported. Blacks were less likely to have education beyond a high school diploma than
whites (27.1% compared to 47.8%). Blacks were more likely to report a primary cocaine problem than whites (48.8% compared to 22.8%). Over the course of treatment, whites attended more treatment sessions than blacks. There were no differences in rates of reported legal pressure to undergo treatment or severity of legal problems between black and white participants. Comparative strengths among black participants included lower psychiatric severity ratings compared to whites. Twelve-step program participation was examined in this study as a possible mediator to drinking outcomes. Interestingly, Alcoholics Anonymous (AA) and Narcotics Anonymous (NA) participation increased more among blacks than whites in this sample.

In Tonigan’s secondary analysis of Project MATCH data (2003), more of the same is reported: black participants have fewer years of education than white participants, blacks held lower paying jobs, and were less likely to be married. Blacks drank significantly more intensely on drinking days at baseline than whites in this study. In addition at baseline, whites reported more Alcoholics Anonymous experience than blacks. Black and white participants in Project MATCH had equivalent rates of therapy attendance, therapeutic bonding with their counselors, and agreement with therapy goals. Black participants rated the value of therapeutic tasks more highly than whites, but whites provided a higher rate of global satisfaction with treatment.

Given these baseline psychosocial and treatment-utilization disparities, researchers hypothesized blacks would fare more poorly on measures of drinking after alcoholism treatment. They are baffled, therefore, by the resulting equivalent outcomes. If significant disparities exist at intake, wouldn’t it be logical to expect disparate outcomes? Wouldn’t African Americans fare more poorly, drink more, and abstain less,
at the conclusion of treatment and at follow-up points? Researchers speculate about these findings. Brower and Carey (2003) posit blacks may have higher motivation for treatment or abstinence, or stronger alliances with the treatment center than whites. They highlight blacks reported higher levels of social support. For blacks in their study, social support correlated significantly with improvements in drinking frequency and improvements in drinking quantity. Further, in their study, blacks had better rates of retention. They recommend future research on race and alcoholism focus on what their findings suggested might be making a difference: social support for sobriety, and motivation for treatment and treatment alliance, which could have had an impact on observed better rates of retention.

McKay et al. (2003), in the aftercare study, also measured process variables that could mediate drinking outcomes. They write:

Whites seem to recover through the mechanisms that are most widely discussed in the literature, namely increased self-efficacy, attendance at self-/mutual-help programs, and commitment to absolute abstinence. The last factor is also an important predictor of recovery in blacks, but self-efficacy and self-help attendance were not, which indicates that other processes are central to recovery in this group (p. 1323). They summarize, “blacks and whites may be taking different roads, so to speak, to relatively similar alcohol use outcomes” (p. 1323). The researchers recommend future studies explore “possible differences in process, or mediational, effects … as they could provide insights into ways to improve treatment for blacks” (p. 1323).
Morgenstern and Bux (2003) do not speculate why blacks in their study had socioeconomic and health disparities at intake but displayed equivalent outcomes at follow-up. However, Tonigan (2003) writes:

…minority groups entered Project MATCH treatment with fewer prognostic indicators of positive outcome, yet they reported, in general, equivalent treatment outcomes. This is an important riddle to solve. Identification of the minority-specific resources mobilized to promote behavior change may lead to the integration of such resources in treatment practices or, alternatively, to increased efforts by providers to facilitate minority use of such resources in the community (p. 1344).

Other researchers observing these findings also conclude, “the finding that ethnic groups do not differ in treatment outcomes could result from unidentified strengths and coping mechanisms that minorities bring to treatment rather than from the effectiveness of the treatment per se” (Schmidt, Greenfield, & Mulia, 2006, “Treatment effectiveness,” ¶ 3).

In summary, researchers consider perhaps African Americans have greater social support, higher levels of motivation, and other unknown beneficial mediators (Brower & Carey, 2003; Lowman & Le Fauve, 2003). Others posit it may be because the mechanisms of self-efficacy and self-help seem less central to the recovery of black individuals (McKay et al., 2003). Missing from the speculations is an often overlooked, but well substantiated, strength in the African American community: spirituality and religiosity, and its power to heal and transform.
With the focus on health disparities, deficiencies, and disadvantages, rarely are cultural strengths in the African American community highlighted. On measures of spirituality and religiosity, using psychometric scales or individual items, the majority of studies report black participants score significantly higher than whites (Heisel & Faulkner, 1982; Levin et al., 1994; Taylor et al., 1996). Indeed, whites are deficient, impoverished, and disadvantaged when it comes to these criteria, but rarely is this stated as such.

Religiosity and spirituality have been shown in the research literature to lead to beneficial health outcomes. Defining religion as important in one’s life has been identified as a protective factor among black men who do not drink problematically (Galvan & Caetano, 2003). Similarly, studies have identified positive correlations between religious participation and abstinence from alcohol among African Americans (Collins & McNair, 2002). Researchers are beginning to make the connection between African American spirituality and substance abuse recovery. Brome et al. (2000) identify spirituality as central to African and African American culture and additionally recognize “that recovery from substance abuse involves spiritual development and healing” (p. 474. Also see Jackson, 1995). This study pursues these lines of reasoning to explore connections between race, culture, spirituality, religiosity, and alcoholism treatment outcomes.

This study is a secondary analysis of the Project MATCH data set. It points the searchlight to spirituality and religiosity and their relationship to alcoholism treatment outcomes. It examines the ways in which spirituality and religiosity may operate differently between whites and blacks in the Project MATCH sample. This study
hypothesizes spirituality and religiosity operate more powerfully among black participants as predictors of more favorable alcoholism treatment outcomes. Lowman and Le Fauve’s (2003) paper raises the question: why do blacks and whites achieve equivalent outcomes in alcoholism treatment studies when health and socioeconomic disparities exist at intake? This study has been developed to test one set of hypotheses in an effort to partially answer the question.

In its scope, this study explores the confluence of several pressing social problems: alcoholism, racism, discrimination, oppression, and healthcare disparities. This study also explores the power of spirituality and religiosity in human life generally, and specifically as a cultural strength among African Americans. This study also acknowledges the importance of historical context in understanding contemporary issues. In the following sections of this chapter, alcoholism, alcoholism treatment, racism, discrimination, and oppression, health disparities, substance abuse disparities, and African American spirituality are each addressed.

Alcoholism

It is estimated that 100,000 lives are lost to each year and $184.6 billion is spent to pay for problems related to alcohol use in the United States (U.S. Department of Health and Human Services, 2000). These costs include medical care associated with alcohol-related conditions of all kinds, costs related to alcoholism treatment, losses in productivity by alcohol-abusing workers, and losses due to premature death due to alcohol abuse (NIAAA, 1991, January). These costs are calculated exhaustively by examining discharge records and teasing out costs when alcohol has aggravated a primary condition. As high as these numbers are, they are likely to under represent the scope of
the problem. The role alcohol plays in accidents, workplace problems, and causes of death are often underreported (NIAAA, 1991, January). Therefore, the figures of economic costs to society are necessarily conservative. However, epidemiologists find that the costs to society of alcoholism have been stable for the past 20 years. The cost of drug use has been rising, however, primarily due to increased numbers of individuals incarcerated for drug crimes (NIAAA, 1998, May 13).

In addition to economic costs, acute and chronic health problems and social consequences also accompany alcohol abuse (NIAAA, n.d.). Medical consequences of heavy drinking include alcoholic liver disease; illness and death from susceptibility to infectious diseases such as bacterial pneumonia, pulmonary tuberculosis, and hepatitis C; alcoholic cardiomyopathy (enlarged hearts that don’t pump well); coronary heart disease; cardiac arrhythmia; increased risk of ischemic and hemorrhagic strokes; alcoholic bone disease (which suppresses the formation of new bone); and some evidence, although debated, for increased incidence of breast cancer (NIAAA, 2000). Researchers estimate “20 to 40 percent of patients in large urban hospitals are there because of illnesses that have been caused or made worse by their drinking” (NIAAA, n.d., ¶ 4). Pregnant women who drink take a chance of causing Fetal Alcohol Syndrome in their children (Gmel & Rehm, 2003).

Individuals who start drinking in adolescence are at risk of damaging their brains. During adolescence, “significant changes occur in the body, including rapid hormonal alterations and the formation of new networks in the brain…. Exposing the brain to alcohol during this period may interrupt key processes of brain development, possibly
leading to mild cognitive impairment….” (NIAAA, 2003, April, “Alcohol’s Effects on the Brain” ¶ 1).

Injuries and deaths result from alcohol impairment. Automobile crashes involving alcohol are more likely to result in injuries and death. In 2002, alcohol was a factor in 41 percent of traffic deaths in the United States (Hingson & Winter, 2003). Alcohol also plays a higher role in other unintentional causes of death such as fires, hypothermia, drowning, falls, gunshots, and poisonings (Gmel & Rehm, 2003).

Social consequences are also significant. Social problems associated with alcohol abuse include poor job performance, work absenteeism, violent crime (forensic studies find alcohol is involved in 30 to 90 percent of violent crime), child abuse, and domestic assaults (Gmel & Rehm, 2003). Among adolescents, alcohol involvement increases risk of suicide and contributes to engagement in high-risk sex (NIAAA, 2003). Together, this catalogues the “enormous magnitude of the damage done to society by alcohol-related problems” (NIAAA, 1991, January).

Alcohol Abuse Incidence by Race

Since this study concerns itself with race and alcoholism, it is appropriate to report drinking patterns by race in the U.S. population. Social and cultural factors influence drinking behavior in a given ethnic group. “Genetic heritage, social class, occupational and social roles, and family history of alcohol use all play a role in determining the drinking patterns of people in general” (Collins & McNair, 2002, “Ethnicity in alcohol research,” ¶ 1). Galvan and Caetano (2003) explain:

Alcohol use patterns can be influenced by social and cultural factors such as ethnic groups’ norms and attitudes regarding alcohol use…. A group’s norms
refer to how one should behave in relation to alcohol—for example, beliefs about how much drinking is appropriate for a parent in the presence of small children, for a man at a bar with friends, or for someone at a party at another person’s home. A group’s attitudes refer to general beliefs about drinking, such as whether drinkers have more friends, whether a party is not really a party unless alcoholic beverages are served, and whether “getting drunk” occasionally is acceptable (“Social and Cultural Factors” ¶ 1).

Caetano and Clark (1998) and Galvan and Caetano (2003) report results of national surveys using probability samples of U.S. households. Two interesting categories are “rates of abstention from alcohol” and “frequent heavy drinking” by race. Abstention refers to individuals who completely abstain; they do not drink at all. Frequent heavy drinking is defined as having five or more drinks at one sitting at least once per week. Galvan and Caetano (2003) present data for these categories from 1984 and 1995 allowing for comparison. In 1984, 24% of white men, 29% of black men, 34% of white women, and 46% of black women were abstainers. In 1995, 26% of white men, 36% of black men, 39% of white women, and 55% of black women were abstainers. What we see here is an increase over time in percentage of abstainers across the board with higher increases in abstainers among blacks. Generally, blacks are more likely to be abstainers from alcohol than whites.

In terms of frequent heavy drinking, in 1984, 20% of white men, 15% of black men, 5% of white women, and 5% of black women were categorized as frequent heavy drinkers. In 1995, 12% of white men, 15% of black men, 2% of white women, and 5% of black women were categorized as frequent heavy drinkers. What we see here is blacks
are equally likely as whites to be frequent heavy drinkers. A trend in these data is noted by several authors (Galvan & Caetano, 2003; Schmidt et al., 2006): while the percentage of white men and white women who are frequent heavy drinkers has decreased from 1984 to 1995, the percentage of black men and black women has remained constant over this 11-year period.

Different national surveys report different results based on measurement and methodology. Whereas the previous survey reported blacks and whites are equally likely to be frequent heavy drinkers, the 2000 National Household Survey on Drug Abuse estimates rates of heavy drinking are higher for whites; specifically, 6.6 percent for whites and 4.5 percent for blacks (Galvan & Caetano, 2003). Heavy drinking is defined in this survey as having five or more drinks at one sitting on five or more days within the past 30 days. Further, the National Comorbidity Survey found blacks to have significantly lower rates of substance use disorders than whites (Galvan & Caetano, 2003); by this they mean lower rates of the diagnoses substance use disorders.

In a study of 2,117 racially diverse alcohol-dependent men and women, it was found that the age of onset of alcohol dependence for black and white men was identical (age 21.9) and similar for black and white women (white women at age 23.4, black women at age 25.0) (Hesselbrock, Hesselbrock, Segal, Schuckit, & Bucholz, 2003).

In a national study conducted by Caetano and Clark (1998) it was found that blacks and whites report having zero, one, two, or three or more alcohol-related problems in similar proportions (Galvan & Caetano, 2003), although one researcher (Schmidt et al., 2006) points out that the rates of experiencing three or more alcohol-related problems are slightly higher for black men compared with white men. In 1984, 12% of white men and
16% of black men had three or more alcohol-related problems; in 1995 11% of white men and 13% of black men had three or more alcohol-related problems (Schmidt et al., 2006).

In a 1992 national survey, the rate of alcohol abuse was 4.9% for white men, 2.5% for black men, 1.6% for white women, and 0.7% for black women (Caetano, 2003). Further, in the 1995 National Alcohol Survey in the 50- to 59-year-old age group, rates of heavy drinking are far higher among whites than blacks (16% compared to 3%) (Caetano, Clark, & Tam, 1998). Black adolescents show the “lowest prevalence of lifetime, annual, monthly, daily, and heavy drinking, as well as the lowest frequency of being drunk” (NIAAA, 2002) in comparison with all other ethnic groups.

Therefore, in terms of prevalence in population data, blacks abstain more than whites, have equivalent levels of frequent drinking patterns, lower levels of heavy drinking patterns, and equivalent ages of onset of alcohol dependence. While heavy drinking among whites has decreased, blacks either drink the same or less than whites. This initially sounds favorable; however, health disparities exist. Blacks experience a disproportionate number of health and social consequences of drinking (Le Fauve, Lowman, Litten, & Mattson, 2003; Schmidt et al., 2006). That drinking rates are lower among blacks makes these health disparities all the more striking. These disparities will be described in depth in a separate section on alcoholism and health disparities, below.

Historical Context

Caetano et al. (1998) underscore the importance of the history of blacks in the United States and its relevance, along with other aspects of culture, to blacks’ drinking patterns. The Committee on Understanding and Eliminating Racial and Ethnic Disparities
in Health Care of the Institute of Medicine states health disparities are “rooted in historic and contemporary inequalities” (Smedley et al., 2003, p. 1). La Fauve et al. (2003) add it is important to understand historical trauma in order to adequately understand health disparities. In a 2007 conference on health disparities held at Teachers’ College, Columbia University, Cornel West stated health disparities began with slavery and white supremacy. Recognizing the importance of historical context, our discussion begins there.

In 1492 several black men sailed with Columbus. They were free men. But the Spanish settlers filled the holds of their ships with Native American slaves, for transport back to Spain for sale, when they failed to find gold (Zinn, 2003). By 1518 the transatlantic slave trade began in the reverse direction in an effort to provide free labor to the European colonies in the Americas, and initially to tropical African islands and other parts of Europe. By 1620, the main destination of the slave trade was the Americas. The conditions of the slave ships were horrendous. Boats built to accommodate 450 carried over 600. Smallpox, flux, hunger strikes, filth, stench, suicide, and chains killed or maimed over 50% of those forced onto ships to the new world (Franklin & Moss, 2000).

The potential existed to exploit indigenous people, but Native Americans in North America proved themselves difficult to enslave. Of the North American colonists, Zinn (2003) writes:

They couldn’t force Indians to work for them, as Columbus had done. They were outnumbered, and while, with superior firearms, they could massacre Indians, they would face massacre in return. They could not capture them and keep them enslaved; the Indians were tough, resourceful, defiant, and at home in these woods, as the transplanted Englishmen were not (p. 25).
Zinn (2003) describes why black Africans were enslaved instead:

The Indians were on their own land. The whites were in their own European culture. The blacks had been torn from their land and culture, forced into a situation where the heritage of language, dress, custom, family relations, was bit by bit obliterated except for the remnants that blacks could hold on to by sheer, extraordinary persistence (p. 26).

Portugal, Spain, and England were among the primary colonizers who imported Africans as slaves to work in the production of cotton, tobacco, sugar, indigo, and rice in North and South America and the Caribbean (Knight, 2005).

Influenced by the Enlightenment and British Evangelical Protestantism, England abolished the slave trade in 1807 (Knight, 2005). However, in the New World at that time, demand for slaves was high and increasing. High demand, combined with low supply due to the end of the African slave trade, caused three outcomes that further illustrated the utter comodification of human beings: domestic slave trading, slave “breeding,” and a movement in 1854 to make legal again the transatlantic slave trade (Franklin & Moss, 2000). By 1815 the business of buying and selling domestic slaves was in full swing. Franklin and Moss (2000) write:

Many business firms that dealt in farm supplies and animals frequently carried a “line” of slaves. Auctioneers who disposed of real estate and personal property sold slaves along with there other commodities. Planters abandoning their farms … advertised in newspapers that they had slaves for sale. Benevolent organizations frequently sold slaves by lottery (p. 129).
At the same time “slave breeding” became an enterprise, where girls starting at age 13 were used to deliver infants into slavery, sometimes baring 10 or 15 children for the purpose (Franklin & Moss, 2000). In addition, international slave trade persisted illegally with flagrant violation of the law and minimal punishments if violators were caught. In 1854 a movement gained momentum to permit the legalization of international slave trade once again (Franklin & Moos, 2000).

The slave trade persisted and finally ended in 1870, 350 years after it began. By that time, 10 to 15 million Africans had been forced into slavery and transported to the new world (Zinn, 2003). So many died en route to the Americas that Zinn (2003) estimates, “Africa lost 50 million human beings to death and slavery” (p. 29).

Abolishing the slave trade was not the same thing as abolishing slavery. The institution of slavery persisted in the United States until January 1, 1863, when Lincoln’s Emancipation Proclamation went into effect, almost 100 years after slave trafficking had been outlawed. Slavery persisted in South America; Brazil was the last country to abolish slavery and did so in 1888 (Knight, 2005).

With the emancipation of slaves came celebration and initial advances. Black voting after 1869 resulted in two black members of the U.S. Senate and 20 Congressmen (Zinn, 2003). But simultaneously these advances were besieged. “In 1868, the Georgia legislature voted to expel all its Negro members—two senators, twenty-five representatives” (p. 200). Throughout U.S. history, with every forward step designed to undo racist institutions and racist practices came backlash. Initially, the backlash took the form of terrorism in the form of lynching and ostracism in the form of Jim Crow laws. The efforts of the civil rights movement of the 1960s--including the Montgomery bus
boycott, lunch counter sit ins, nonviolent protest, riots, and international pressure on the United States to practice what it preached (Zinn, 2003)--yielded watershed civil rights legislation in 1957, 1960, and 1964. The civil rights act of 1964 was the most “far-reaching and comprehensive law in support of racial equality ever enacted by Congress” (Franklin & Moss, 2000, p. 539). The civil rights legislation ensured voting and employment equality and abolished separate but equal practices (Zinn, 2003). However, these legislative advances were slowly eroded by the conservative legislative decisions of the Supreme Court under Chief Justice William Rehnquist during the Reagan administration (Singh, 2005; Weisbrot, 1996). The critical race theory movement, “a collection of activists and scholars interested in studying and transforming the relationship among race, racism, and power” (Delgado & Stefancic, 2001, p. 2) was organized around the realization that “the heady advances of the civil rights era of the 1960s had stalled and, in many respects, were being rolled back” (p. 4). The movement focuses on the ways in which “the U.S. Supreme Court’s race jurisprudence, even when seemingly liberal in thrust, nevertheless legitimized racism” (p. 6). West (2001) writes, “white America has been historically weak-willed in ensuring racial justice and has continued to resist fully accepting the humanity of blacks” (p. 7).

Despite successive triumphs in the pursuit of a just society--the abolition of the slave trade, the abolition of slavery, the elimination of legal segregation, the advent of universal suffrage, protection for victims of racial violence, the punishment of those who denied others their civil rights--the fight to rectify the inhumane legacy of slavery and move toward a just society has been fraught with challenge, difficulty, and struggle. Weisbrot (1996) and Singh (2005) differentiate between de jure segregation such as Jim
Crow laws and the denial of the right to vote and de facto segregation, referring to the disproportionate numbers of blacks suffering from “poverty, police brutality, and the unequal access to employment, education, housing and transportation” (p. 476). Cornel West (2001) subcategorizes de facto discrimination into two groups: visible examples and less visible examples:

…the legacy of white supremacy lingers—often in the face of the very denials of its realities. The most visible examples are racial profiling, drug convictions (black people consume 12 percent of illegal drugs in America yet suffer nearly 70 percent of its convictions!), and death-row executions. And the less visible ones are unemployment levels, infant mortality rates, special education placements, and psychic depression treatments (pp. xiv-xv).

West continues, emphasizing the effects of social disparities on youth, “with roughly 40 percent of black children living in poverty and almost 10 percent of all black young adult men in prison, we face a crisis of enormous proportions” (p. xviii). Striking examples of discrimination currently exist in the United States, especially in the areas of housing discrimination, mortgage lending, employment, and criminal justice (Smedley et al., 2003) as well as health disparities.

Health Disparities

Health disparities between blacks and whites are not a new phenomenon. In a 1963 radio and television speech calling for legislation that would uphold equality for all, John F. Kennedy said, “The Negro baby born in America today, regardless of the section of the Nation in which he is born, has … [compared with] a white baby born in the same place on the same day … a life expectancy which is 7 years shorter” (Kennedy, 1963,
June 11). Zinn (2003) writes that in 1977, blacks were twice as likely to die of diabetes (p. 466).

In 1999, the National Institutes of Health (NIH) created a working group to address health disparities (Le Fauve et al., 2003). In January 2000, the group articulated its definition of health disparities as “differences in the incidence, prevalence, mortality, and burden of diseases and other adverse health conditions that exist among specific population groups in the United States” (Le Fauve et al., p. 1318).

Prior to the publication of Unequal Treatment: Confronting Racial and Ethnic Disparities in Health Care (Smedley et al., 2003), the focus on health disparities was on insurance coverage and socioeconomic status. However, this report shifted the focus to “deep, racially based inequalities that also exist in the quality and appropriateness of care” (Schmidt et al., 2006, ¶ 1). “Minorities tend to receive services of inferior quality, are less likely to receive even routine medical services, and ultimately experience poorer outcomes of care” (Schmidt et al., ¶ 1). Compellingly, these differences persist even when controlling for insurance status, income, and education (Smedley et al., 2003). Differences between blacks and whites in life expectancy, rates of HIV, breast cancer, heart disease, diabetes, infant mortality, prostate cancer, and rates of morbidity and mortality remain strikingly divergent. Collectively, these findings are bleak. As cold, hard facts, they are also undeniable. They confront the illusion that we live in a society that is basically fair and equitable.

African American infants are 2.5 times more likely to die than are white infants. African American women are twice as likely to die of cervical cancer than white women, and more likely to die of breast cancer (Office of Minority Health, 2007, January 25).
While incidence of breast cancer per 100,000 is lower for blacks than whites (111.5 versus 130.8, respectively), mortality rates are higher. Per 100,000, 34.4 blacks die of breast cancer compared with 25.4 whites (American Cancer Society, 2007). In general, African Americans are more likely to develop and die from cancer than any other racial or ethnic population. The death rate from cancer among African American males is 38% higher than among white males; for African American females, it is about 17% higher. African Americans have a higher mortality rate than whites for each of the major cancer sites (colorectal, male lung, female breast, and prostate), as well as higher incidence rate for all of these cancers, except female breast (American Cancer Society, 2007, p. 32).

Rates of death from cardiovascular diseases were 29% higher for African Americans than for whites. Rates of death from stroke were 40% higher for African Americans than for whites. African Americans are twice as likely as whites to be diagnosed with diabetes. African Americans and Hispanics, representing 26% of the population, accounted for 66% of adult AIDS cases and 82% of pediatric AIDS cases in the first half of 2001. Older African Americans are less likely to receive influenza and pneumococcal vaccines. Blacks are four times more often infected with Hepatitis B (Office of Minority Health, 2007, January 25). Hepatitis C infection is more prevalent among African Americans than among any other U.S. racial group. While African Americans make up 12% of the U.S. population, they represent 22% of those infected with Hepatitis C (Pearlman, 2006). In 1999, the racial distribution of those with primary or secondary syphilis was 75% African Americans, 16% whites, 8% Hispanics, and 1% others (Office of Minority Health, 2007, January 25).
Why Health Disparities Exist

The Committee on Understanding and Eliminating Racial and Ethnic Disparities of the Institute of Medicine describe the causes of health disparities as complex and overlapping. Specifically, they identify patient-level and health-systems-level variables. Patient-level variables include patients’ preferences, minority patient mistrust and experiences of discrimination, patient refusal of recommended treatment, biological differences that may justify differences in receipt of care, and the overuse of clinical services by white patients. Health-systems-level variables include language barriers, availability and access to services, clinical bureaucracies, referral patterns and access to specialty care, fragmentation of healthcare systems, the U.S. Department of Defense and Veterans Administration healthcare systems, managed care, economic factors related to cost containment and demand for clinical services, and legal and regulatory policies (Smedley et al., 2003).

The Committee fully recognizes racial attitudes and discrimination in the United States play a factor in health disparities. Their finding numbered 2-1 is as follows: “Racial and ethnic disparities in healthcare occur in the context of broader historic and contemporary social and economic inequality, and evidence of persistent racial and ethnic discrimination in many sectors of American life” (pp. 6-7). Individual researchers concur. Shi, Regan, Politzer, and Luo (2001)’s findings suggest “racial/ethnic disparities in health care are not simply a straightforward reflection of sociodemographic differences across racial/ethnic groups … a more complex relationship underlies the interaction between people of different racial/ethnic backgrounds and the health care system” (p. 578).
Ultimately, these researchers identify the problem as “socioeconomic and political
ingjustice” (p. 578).

**Health Disparities in Substance Abuse and Alcoholism**

Only recently have researchers been concerned with the drinking behavior of ethnic minorities. Although a nationwide alcohol survey has been conducted in the U.S. since 1964, it was only in 1984 that the survey emphasized the experience of blacks and Hispanics (Caetano et al., 1998). As mentioned earlier in this chapter, drinking rates are approximately equivalent between blacks and whites and rates of abstinence are higher for blacks. This suggests problems caused by alcohol would be equivalent, or fewer in number, for blacks. However, this is not the case. Blacks suffer a disproportionate amount of the social and physical costs of alcoholism compared to whites. It is important to note that some ethnic groups, such as Native Americans and Alaskan Natives, disproportionately bear the brunt of social, economic, and health consequences of drinking. Their percentages of traffic deaths that are alcohol related—68%—are highest of any ethnic group (Hingson & Winter, 2003). Chronic liver disease and cirrhosis is the sixth leading cause of death for American Indians/Alaska Natives and for Hispanics (Galvan & Caetano, 2003) while Asians and Pacific Islanders tend to face the fewest consequences of drinking (Collins & McNair, 2002). However, for the purposes of this study, the discussion will be limited to a comparison between black and white drinkers.

Generally, the prevalence of drinking and driving in 2001 was lower for blacks: 7% compared with 11% for whites (NIAAA, 2002). However, whites and blacks have similar percentages of traffic deaths that were alcohol related (Galavan & Caetano, 2003; Hingson & Winter, 2003; NIAAA, 1994). Other than car crashes, alcohol-related death
rates for injuries and accidents and chronic conditions such as liver damage and cancer are higher among blacks than whites (Jones-Webb, 1998; NIAAA, n.d.).

Blacks have higher rates of cirrhosis mortality than whites. While “chronic liver disease and cirrhosis” is not one of the top 10 causes of death for blacks or whites, among males aged 55-64 it is a top 10 leading cause of death for all ethnic groups. Per 100,000 men in 1999, rates of death from cirrhosis were 34.7 for whites and 45.3 for blacks (Galavan & Caetano, 2003). The rates of cirrhosis deaths overall are higher for blacks than whites (Caetano, 2003); when Hispanics are separated from the data pool, Hispanics have higher incidence of cirrhosis deaths than blacks or whites.

Blacks are more likely to have a coexisting drug dependence that either white or Hispanic alcoholics (Caetano, 2003). Black infants are seven times more likely to be born with Fetal Alcohol Syndrome than white infants (NIAAA, 1994), again, despite higher abstinence rates among black women. There is higher co-morbidity of drinking and intimate partner violence among blacks and Hispanics than among whites (Caetano, 2003; Schmidt et al., 2006). Lack of insurance should not be a barrier to alcoholism treatment because alcoholism treatment is subsidized by federal government funds. However, one study found uninsured whites were three times more likely to receive alcoholism treatment than were uninsured blacks (Wu, Kouzis, & Schlenger, 2003).

Cashnoff, Landress, and Barrett (1990) conducted a compelling study of pregnant alcohol-abusing women in Florida. While they found the rates of alcohol use were equivalent for black and white women in the study, black women were 10 times more likely to be reported to law enforcement for court-mandated intervention than were white women.
In addition to disparate rates of disease and illness, another important area of research addresses the intersecting lines of alcoholism, race, and discrimination. This is the work on alcohol outlet density (Alaniz, 1998). Alcohol outlets are vendors of alcohol: either bars or liquor stores. There are many more alcohol outlets in minority communities than in white communities. Further, researchers counted alcohol outlets in minority and white communities and correlated these figures with incidents of violent crime. Controlling for race and ethnicity, there is evidence alcohol outlet density is a stronger predictor of homicide and violence than race or ethnicity. Disparities in arrest rates are staggering. In neighborhoods with no alcohol outlets, arrests are 1.19 per 1,000. In neighborhoods with high concentrations of alcohol outlets, arrests are 18.67 per 1,000 (Alaniz, 1998).

More alcohol outlets means more alcohol advertising, and alcohol advertising affects children and may encourage them to hold positive beliefs about drinking. In one Latino neighborhood in northern California, children walking to school may be exposed to as many as 60 alcohol advertisements in storefronts (Alaniz, 1998). Prevalence of billboard advertising also contributes to community exposure to drinking images. Altman, Schooler, and Basil (1991) studied billboard advertisements in San Francisco. They found this advertising was more likely to feature tobacco and alcohol than other products or services and black neighborhoods in their study had the highest rate of billboards per 1000 population. Further, they found black and Hispanic neighborhoods had more tobacco and alcohol billboards than white or Asian neighborhoods.
Black Participation in Alcoholism Research Studies

It is relevant to discuss the participation of African Americans in alcoholism research and in research generally. If blacks are disproportionately excluded from research, findings may not be relevant to the black community. Misinformation of this nature could worsen health disparities.

Most substance abuse treatment studies survey participants who are primarily white and male (Humphreys & Weisner, 2000; Krentzman, 2007). Typical study inclusion and exclusion criteria tend to eliminate prospective participants who are poor, homeless, psychiatrically and cognitively lower functioning, and in other ways disenfranchised (Humphreys & Weisner, 2000; Lowman & Le Fauve, 2003; Taylor, 2003). This means many treatment studies exclude the underclass. Thus, the results can more likely be generalized to the largely white male middle class subjects on whom the research was conducted.

It means, too, that treatment studies tend to exclude black participants. In a ground-breaking study, Humphreys and Weisner (2000) identified the eight most common exclusion criteria used in alcohol treatment research. These criteria are psychiatric/emotional problems, noncompliance/lack of motivation, medical problems, drug dependence, unsuccessful prior alcohol treatment, residence distant from treatment facility, social instability, and residential instability. They selected 593 individuals seeking treatment to serve as hypothetical research subjects from eight public and private alcohol treatment programs in a northern California county. They found that psychiatric/emotional problems, drug dependence, residence distant from treatment facility, social instability, and residential instability disproportionately excluded black
participants. The overall result of these exclusion criteria was a research sample “more heavily composed of white, economically stable, and higher-functioning individuals than … real-world samples of substance abuse patients seen in clinical practice” (Humphreys & Weisner, 2000, p. 588).

Another factor that dissuades people of color from research participation is distrust of research generally and negative attitudes toward research institutions and the U.S. government (Caetano et al., 1998; Taylor, 2003). Distrust of assurances of confidentiality and anonymity also dissuade individuals from research participation (Taylor, 2003). Another area of investigation is of research subjects who do and do not return, who drop out, and who withdraw and whether those who leave the study are disproportionately people of color. Janson, Alioto, and Boushey (2001) studied 35 subjects who withdrew from a large, randomized trial. They found these subjects were more likely to be females and ethnic minorities.

Religion and Spirituality

Broad theories of religion from the social sciences provide the theoretical and empirical foundation for this study. Each of the following architects of religious theory--Durkheim, Weber, Frankl, Cone, and Williams--contribute to this study by way of their ideas about religious coping, religious longing and striving for justice, and salvation for those who suffer.

Durkheim identified religion as inextricable from society itself. From his famous investigation of Australian aborigines, he made the following groundbreaking discovery: religion is society and society is religion (Pals, 2006). Relevant to this study, Durkheim emphasized the role religion plays in creating solidarity and sense of community among
those who worship together. Durkheim emphasizes religion’s role in helping individuals feel part of something greater than themselves, part of a social group of others who also participate in religious activities. According to Durkheim, religion “serves as the carrier of social sentiments, providing symbols and rituals that enable people to express the deep emotions which anchor them to their community (p. 107).

Weber is important to this study for his work on prophetic religions. Prophetic religions offer individuals “a comprehensive program for achieving inner spiritual resolution or final escape from life’s limitations and sorrows” (Pals, 2006, p. 170). In his thinking, Weber lays a foundation for the importance of religion to the poor and disenfranchised. About Weber’s ideas, Pals (2006) writes,

the lower the social class, the more intense becomes the need to frame a redemption story in which a god takes human form in order to bring deliverance to the faithful…. The poor are drawn to savior cults in part by the hope of a future reward, righting life’s injustices either in the immediate present or in a future life (p. 170).

Weber addresses the fundamental idea of theodicy, a central religious concept to those who are suffering or have suffered. Pals (2006) writes,

…all the world’s prophetic religions must deal with one overriding intellectual problem—the mystery of evil or theodicy (in Greek, “justifying God”). They need to explain how any idea of ultimate goodness can fit together with a day-to-day world that is so deeply flawed and filled with suffering” (p. 171).

Thus, Weber’s work provides a foundation for understanding the strength and importance of religion for the poor and oppressed.
Frankl (1984) wrote about the ability to achieve spiritual heights despite egregious social and physical circumstances. He found it was even possible for “spiritual life to deepen” (p. 47). Frankl was a prisoner in the Nazi death camps. It was here he solidified the foundation for his theory of logotherapy. Frankl found, regardless of circumstances, if a person has a higher purpose, such as a person to love or life’s work to fulfill, that person can transcend annihilation and find purpose and meaning and inspiration to live on. Frankl points out that even when one is physically enslaved, the spirit is still free. Of some of his fellow prisoners, he writes, “they were able to retreat from their terrible surroundings to a life of inner riches and spiritual freedom” (p. 47). He found despite horrible circumstances, “the last inner freedom cannot be lost …. It is this spiritual freedom which cannot be taken away—that makes life meaningful and purposeful” (p. 75). Frankl contributes to this study the idea that the poor and oppressed, the victims of racism, persecution, and genocide, can achieve a soaring spirituality borne of suffering.

Cone (1999) and Williams (1993) write from the African American experience. They are the architects of Black Liberation Theology and Womanist Theory, respectively. They contribute the idea that religion, specifically Christianity, is the fertile soil in which social action can take root, grow, and blossom. They see the Bible as containing the fundamental message of redemption and social action necessary to alleviate racism, sexism, and classism. The work of Cone and Williams is developed further in the next section. They offer this study the idea that a prescription for social transformation and the alleviation of suffering for African American men and women is to be found in the religious ideas of Christianity and the Bible.
African American Religion and Spirituality

Many authors recognize the central role of spirituality and religion in African American culture (Bowen-Reid & Harrell, 2002; Bridges, 2001; Lincoln & Mamiya, 1990; Stewart, 1997). In his 1993 essay, Religion in the African American Community, Murphy asks whether it is accurate to say African Americans are a “religious people.” He answers yes, and builds his rationale on two primary arguments: religion as cultural worldview and religion as precious arena of freedom. Murphy (1993) describes religion as the framework for the African American worldview:

…by and large, African Americans have inherited a religious vocabulary, primarily Judeo-Christian, which colors and adds grace notes to their articulation of their reality. They have inherited a religious conceptual framework, largely Judeo-Christian but informed by residual African categories and filtered through their American experience. Through this framework their reality is interpreted and understood and issues of present well-being and ultimate destiny are addressed (p. xxxiii).

Many scholars have described religion as sanctuary from slavery, racism, and discrimination for African Americans throughout history (Cannon, 1995; Lincoln & Mamiya, 1990). Lincoln and Mamiya write that freedom for blacks throughout history has had a “deep religious resonance” (p. 4). Murphy further articulates the idea:

In the constraining, inhibiting context in which most of African America has lived for most of its history, religion has been an arena of freedom. Religion happens internally, beyond society’s proscriptive reach. In its institutional expression, whether the ‘invisible institution’ of the slaves or the more formal, overt
structures of free persons, there has been afforded to Blacks a level of ownership
and self-determination, indeed self-articulation, largely unavailable in any other
sphere before the present time. Hence the centrality of religious institutions in
African American community life (p. xxxiii).

In addition to the centrality of African American spirituality and religion, African
American religious participation is diverse. The Encyclopedia of African American
Religions has entries for several hundred different black Christian denominations.
Lincoln and Mamiya (1990), in The Black Church in the African American Experience,
recognize white denominations that have a million or more black members, such as the
United Methodist Church and the Roman Catholic Church. They also specify
“independent, historic, and totally black controlled denominations” (p. 1) which they
identify collectively as the “black church.” These churches were started in response to
segregation and discrimination experienced by blacks as they sought to worship in white
institutions (Franklin & Moss, 2000). They include the following seven major historic
black denominations: the African Methodist Episcopal Church; the African Methodist
Episcopal Zion Church; the Christian Methodist Episcopal Church; the National Baptist
Convention, U.S.A., Incorporated; the National Baptist Convention of America,
Unincorporated; the Progressive National Baptist Convention; and the Church of God in
Christ (Lincoln & Mamiya, 1990, p. 1). Beyond these affiliations, scholars emphasize the
“broad participation of African Americans across the spectrum of American religious life,
from orthodox Christianity to Eastern religions to African-based religions” (Melton &
Murphy, 1993, p. xix). Black spirituality has a long, rich cultural history that represents
one of the forms of survival that began in Africa and developed during slavery as an
expression of solidarity, strength, dignity, and resilience of the human spirit.

From the beginnings of slavery, resistance to its unconscionable and inhumane
conditions was waged (Franklin & Moss, 2000; Knight, 2005; Zinn, 2003). Lewis (1983)
divided the forms of resistance employed by black slaves in the Americas into three
categories. The first category included sabotage, work slowdowns, suicide, killing slave
owners, malingering, deliberate absence from work, destruction of farm equipment,
cattle, and crops; behaviors up to but not including escape and open revolt. The third
category included escape and open revolt. The second category is of primary interest to
this study. Lewis argues any and all efforts of slaves to nurture and develop their own
unique and “autonomous world of culture” also constitute resistance. By this definition,
the development of ritual, language, song, dance, family and religion were expressions of
resistance and protest to the dehumanizing conditions of slavery. Da Costa (1977)
concurs and identifies “cultural resistance” as a form of social protest. Levine (quoted in
Zinn, 2003) calls this form of resistance “pre-political.” Cornel West stated in a recent
talk in New York City (2007) that black indigenous art forms such as spirituals were
evidence of a community’s ability to find “beauty in the face of social death” and a
refusal to be dehumanized. Therefore, African American spirituality was an early form of
social protest, community solidarity, and life-sustaining identity.

The black church also has its roots in slavery. Some slave owners sought to
convert their slaves to Christianity and participated with them in worship services
(Franklin & Moss, 2000; Moore, 1992). However, many avoided the practice of baptism
as it implied liberation and freedom. A Christian bishop in 1740 stated, “…some, it may
be feared, have been averse to their slaves becoming Christians, because, after that, no Pretence will remain for not treating them like men” (Klingberg, 1940 as quoted in Moore, 1982). Slave owners controlled the content of the Christian message slaves received; religious messages were designed to enforce social control and to reinforce the status quo. Slaves were told there would be a reward for them in heaven if they behaved here on earth. Preachers were instructed to teach only those sections of the bible that reinforced the social world as it was (Bowen-Reid & Harrell, 2002; Franklin & Moss, 2000; Zinn, 2003).

However, in secret meetings, slaves practiced their own form of spirituality. Slaves met in open fields or secluded woods or domiciles to sing, preach, pray, and tell Bible stories. These meetings were so prevalent historians call them part of an “Invisible Institution” (Moore, 1992).

The first black churches were organized in the 1770s. There is debate whether the first black church began in Silver Bluff, South Carolina or in Savannah, Georgia, but a black church in each of these locations came into existence in this decade (Moore, 1992). In response to segregation suffered within white churches, African Americans split off and formed their own institutional denominations, such as the African Methodist Episcopal Church, founded in Philadelphia in 1794, and the African Methodist Episcopal Zion Church, founded in New York City in 1796 (Franklin & Moss, 2000). In 1910 many African-Americans moved north to meet the demands of industrial labor. The clash between northern churches and what many were familiar with in the south led to the establishment of new “urban” black religions, such as Spiritualist, Holiness, Pentecostalism, and the Nation of Islam (Moore, 1992).
The black church has been recognized as “an agent of mutual help, empowerment, and social change” (Moore, 1992, p. 238), “the only vestige of the so-called freedoms guaranteed other Americans” after slavery and before civil rights legislation (Wingfield, 1988 as quoted in Moore, 1992, p. 245), and “one of the few stable and coherent institutions to emerge from slavery” (Lincoln & Mamiya, 1990, p. 7). The black church has been called the centerpiece of the economic, political, and social life of the black community (Franklin & Moss, 2000), “the womb of black culture,” and the birthplace for black social institutions (Lincoln & Mamiya, 1990, p. 17). Lincoln and Mamiya list “schools, banks, insurance companies, and low-income housing” (p. 8) as institutions started in the black church and add that the church “also provided an academy and an arena for political activities, and it nurtured young talent for music, dramatic, and artistic development” (p. 8).

The role of the black church during the civil rights movement was central: the Southern Christian Leadership Conference was a frontrunner in the movement. This organization coordinated local protest groups in the South; its power base came from black churches and its leader was Martin Luther King, Jr. Acknowledging the central role of the black church, King described the organization as "church-oriented because of the very structure of the Negro community in the South" (The Martin Luther King, Jr., Research and Education Institute, 2007). Cartwright (1993) validates King “based his words and deeds on his Christian convictions” (p. xxxvii). Cartwright sites the following excerpt from a sermon King delivered in 1956 as evidence that King’s primary allegiance was to God:
You have a dual citizenry. You live both in time and eternity; both in heaven and earth. Therefore, your ultimate allegiance is not to the government, not to the state, not to nation, not to any man-made institution. The Christian owes his ultimate allegiance to God, and if any earthly institution conflicts with God's will it is your Christian duty to take a stand against it. You must never allow the transitory evanescent demands of man-made institutions to take precedence over the eternal demands of the Almighty God (King, 1956, November 4).

Black Liberation Theology speaks to the interrelatedness of the African American experience, religion, and the struggle against racism, discrimination, and oppression. James Hal Cone, a doctoral student and student of theology in the 1960s, became enraged when his theology professors talked about scripture and utterly ignored the contemporary civil rights movement raging just outside the seminary gates. The work of Martin Luther King, Jr. and Malcolm X influenced Cone and inspired him to conceptualize Christianity free from its white establishment enmeshment. Cone controversially drew from the work of both men. He did not find Malcolm X’s message to be non-Christian as others had, but found it to be utterly and profoundly about Christianity in its insistence that blacks deeply identify with their blackness and see the world from a black perspective. Cone found Malcolm X’s insistence on a black worldview free of contamination by the oppressor to be utterly Christian. This encouraged Cone to envision the Bible from a black perspective and shake off its white establishment influences entirely. Looking to scripture, Cone found evidence for black empowerment and social justice. Criticizing the “pie in the sky when you die” rhetoric of complacency and compliance often found in the white and black churches, Cone found in the Bible a call for social action—to bring about liberation
and justice and freedom here on earth, right now, and not wait for rewards in heaven. The idea is that “the world should not be the way it is and that it is therefore the task of Christians to change it” (Cone, 2005, p. 1285).

Cone supports the idea of Jesus as emancipator of the poor with the following citation from Luke, where Jesus “defines the nature of his ministry” (Cone, 1999, p. 8):

The Spirit of the Lord is upon me,

because he has anointed me to preach the good news to the poor,

He has sent me to proclaim release to the captives and recovering of sight to the blind,

To set at liberty those who are oppressed,

To proclaim the acceptable year of the Lord (Luke 4:18, 19).

Jesus, in his experience of persecution, is understood to be a “divine co-sufferer, who empowers [his followers] in situations of oppression” (Grant, 1993). Grant (1993) describes the nature of the identification with the co-sufferer: “The condition of Black people … reflects the cross of Jesus. Yet the resurrection brings the hope that liberation from oppression is imminent. The resurrected Black Christ signifies this hope” (p. li).

Cone launched his idea of black theology with the publication of his first book, *Black Theology and Black Power*, in 1969 in his second book, *A Black Theology of Liberation*, in 1970. These books gave birth to black theology, but Cone admits before they were written his thoughts and ideas were influenced by a growing grassroots movement in the direction of a black theology taking shape in the churches and communities of black America (Cone, 1996). He points out its tenets came from the
churches and not from white-dominated seminaries or universities (Cone, 1996). The basic idea is all are equal in the eyes of the Lord.

By coincidence, in Bolivia, South America, at the same time and Cone was writing, religious leaders were coming to the same conclusion—that the Bible contained a central message calling for the liberation of oppressed people—that God is “the liberator of the poor and oppressed” (Williams, 1993, p. 2). Over time the basic tenets of liberation theology were expanded to include the experience of women and of oppressed groups in Asia and Africa (Cone, 2005). In the United States, Womanist thinking evolved to respond to the sexism found in Black Liberation Theology and racism found in the Feminist movement (Grant, 1993; Williams, 1993). It sought to situate black women’s experience centrally within Christian theology and the black church, from which it previously had been excluded (Williams, 1993), while recognizing that black women are the “overwhelming majority in their congregations” (p. xiii). Womanist thinkers reinterpret the Bible from a black, female worldview and identify as its central metaphor the life of Hagar, the African slave of the Hebrew woman, Sarah (Williams, 1993). Womanist thinking, with its emphasis on black women, often poor black women, simultaneously addresses racism, sexism, and classism (Cannon, 1995; Grant, 1993; Williams, 1993). Womanist thinkers criticized Cone for his focus on men only, and Cone recognized his patriarchal world view and sought to correct it in future writings. The Womanists’ multifaceted focus on racism, sexism, and classism promotes the idea that human liberation could not be achieved by eradicating only certain forms of oppression. The spread of liberation theology demonstrated the idea of true liberation for all people,
everywhere. As it grew, liberation theology became a worldwide movement (Cone, 2005).

Black religiosity and spirituality, in its role in the promotion of social justice and its affirmation of life itself, has led scholars to conclude, “probably no other single institution has played such an important role in maintaining the cohesion of black society as the black church” (Jaynes and Williams, 1989, as quoted in Moore, 1992, p. 248).

Many social scientific research studies offer evidence that rates of black participation in church activities and rates of spirituality are significantly higher than that of whites (Heisel & Faulkner, 1982; Levin et al., 1994; Taylor et al., 1996). Several empirical studies have demonstrated the ways in which spirituality among African Americans functions to buffer against stress and enable more favorable outcomes of all kinds.

Johnson, Elbert-Avila, and Tulsky (2005) reviewed the literature on spirituality and African Americans. In their meta analysis of 40 research studies on the ways in which the spiritual beliefs of African Americans influence medical care, they identified the following prevalent themes: spirituality as a source of comfort, coping and support; spirituality as an effective way to influence healing; God’s responsibility for health; the idea of the doctor as God’s instrument; God’s power over life and death (and therefore prohibitions against advanced directives and physician-assisted suicide); and belief in the existence of divine interventions and miracles.

A number of studies report that white men in good health are less likely to be religious than women and people of color (Levin et al., 1994; Mansfield, Mitchell, & King, 2002; Reed, 1987). In fact, studies find that generally, spirituality increases with
age, African-American ethnicity, and poor health (Bearon & Koenig, 1990; Levin et al., 1994; Mansfield, Mitchell, & King, 2002). Pargament (1997) comments on this phenomenon:

Elderly, poorer, less educated, blacks, widowed, women—why should religion be more helpful to these groups in coping? What do they have in common? In general, these groups have less access to secular resources and power in our culture. Religion, for them, represents an alternative, a resource that can be accessed more easily. It may be no coincidence that the groups that find religion more helpful are the same groups that report higher levels of personal religiousness and more frequent use of religion in coping. For them, religion has become a larger part of their orienting system, a framework more frequently called upon for coping with major crises. It appears that those who invest more in their religion gain more from it in coping. (p. 30).


The poor feel that they are voiceless, and that they do not have control over their own destiny. They are buffeted by forces beyond their control. And the poor feel insecure. Not only is their income uncertain—changes in economic circumstances beyond their control can lead to lower real wages and a loss of jobs, dramatically illustrated by the East Asia crisis—but they face health risks and continual threats of violence, sometimes from other poor people trying
against all odds to meet the needs of their family, sometimes from police and others in positions of authority. While those in developed countries fret about the inadequacies of health insurance, those in developing countries must get by without any form of insurance—no unemployment insurance, no health insurance, no retirement insurance. The only safety net is provided by family and community, which is why it is so important, in the process of development, to do what one can to preserve these bonds (Stiglitz, 2003, pp. 83-84).

Stiglitz speaks of the lives of the poor and disenfranchised worldwide. When there is no social safety net, no social policies, no welfare or public assistance, Stiglitz’s quote bears repeating: “the only safety net is provided by family and community” (p. 84).

This is also true of the disenfranchised here at home. As with other disenfranchised groups worldwide, when the larger social system overlooks one group’s needs in favor of more privileged groups, the larger social system’s safety net has failed some members of society. Therefore, like the poor and disenfranchised worldwide, disenfranchised groups turn instead to family and community; and, also, to spirituality and faith.

Social Support and Spirituality

Spirituality usually doesn’t thrive outside of a social context. Buddhists meditate together, Quakers meet together, Jews worship together in synagogues, Muslims in mosques, and Christians in churches. This collective form of worship provides a spiritual orientation as well as a source of community. Twelve-step programs also provide a spiritual point-of-view as well as fellowship of other individuals seeking recovery. The social aspects of spiritual communities provide friendship, material help, and emotional
sustenance. In the literature, social support and spirituality are significantly correlated in a sample of African American men (Wingate et al., 2005). While spirituality and community are interrelated, it is important to note that this study focuses on spirituality and religiosity; it does not address the related construct of social support.

This study is the first large-scale, quantitative comparison between African American and white spirituality and its impact on substance abuse treatment outcomes over time. This study seeks to illuminate the degree to which African American spirituality offers a powerful community strength that can be tapped in substance abuse treatment. Evaluation and validation of this study’s conceptual framework, a socio-cultural interpretation of the stress and coping model (described fully in chapter 2) would strengthen this model’s use in other work, and underscore the need to recognize the importance of ethno-cultural context in psychological or sociological behavioral theory and research. Finally, this study addresses gaps in existing knowledge by examining the interrelationship of race and spirituality and religiosity and identifying African American spirituality as a potential cultural strength as it relates specifically to alcoholism treatment outcomes. To this end, this dissertation focuses on the following primary question: Does race moderate the relationship between spirituality/religiosity and drinking outcomes?
Chapter 2: Conceptual Framework and Literature Review

Modified Stress, Coping, and Well-Being Model

The conceptual framework for this study is a modified version of classic stress and coping theory. Lazarus and Folkman (1984) developed this theory. The model can be conceptualized in its simplest form as a geometric triangle with stress, coping, and well-being representing the three corners.

Figure 1. Classic Stress, Coping, and Well-Being Model

Lazarus and Folkman (1984) describe the ways that pressure impinges on the organism, and define stress as the outcome when the organism does not have the capacity or resources to respond. Coping, then, is the mechanism that gets engaged when the stressor exceeds an individual’s ability to manage. Coping takes two forms in Lazarus and Folkman’s model: problem-focused and emotion-focused. In problem-focused coping, the system attempts to take action to change the source of the stress resulting in a reduction of stress. In emotion-focused coping, the system attempts to make internal adjustments to better manage the psychological and emotional impact of the stress, so that painful or severe emotional states are ameliorated, even if there is no change in the stressor itself in terms of its presence or intensity. The outcome of effective coping in this model is well-being, often measured by good mental or physical health. In this model, there is a great emphasis on the individual. Through primary and secondary appraisal
processes, individuals first assess whether a given element in the environment is stressful and then consider what they might do to respond to it. Lazarus and Folkman emphasize the following: the degree to which something is perceived as stressful or not, and the range of coping options available in a given circumstance, vary greatly from individual to individual. This is the classic stress and coping paradigm.

Generally speaking, when applied to addiction, the stress construct of the model represents the stressors of getting and staying sober. The stress involved in recovery from alcoholism is formidable. As articulated by Green, Fullilove, and Fullilove (1998):

Those in recovery from addiction must learn to negotiate their way through life’s complex maze of disappointments, obstacles, and burdens without the use of alcohol or drugs. They must reestablish relationships and reorder their use of time. They must recognize the rights of others in daily interactions” (pp. 325-236).

In this study’s application of stress and coping theory, coping refers to the efforts expended to overcome stressors related to addiction, recovery, and the stressors of racism, discrimination, and oppression experienced by African Americans. Research has recognized these socio-cultural stressors and their impact on drinking. Stress experienced by ethnic minorities in the U.S. related to adjustment to the dominant U.S. culture has been categorized into three types: (1) acculturative stress, representing leaving one’s homeland and adaptation to a new culture, (2) socioeconomic stress, representing poverty and limited social class standing, and (3) minority stress, representing encounters with racism (Caetano et al., 1998). New studies are being funded to explore the relationship between socio-economic stressors and drinking. The NIAAA recently funded a study
entitled, “Race, Stressors, and Alcohol-related Health Disparities.” The purpose of the study is “to examine associations between minority status, social stressors such as poverty, racial stigma, and perceived discrimination, heavy drinking, and alcohol-related health and social problems” (Alcohol Research Group, 2007).

The coping construct in this study is represented by African American religiosity and spirituality. Well-being represents favorable drinking outcomes.

One comment about stress and coping theory as conceived by Lazarus and Folkman (1984) warrants attention. The theory as expressed by the authors does a poor job of addressing issues of social justice. In the chapter entitled, “The Individual and Society,” the authors quote Pearlin and Lieberman (1979) who state where people are positioned in society, where they are positioned in the broader social order (based on sex, race, marital status, and socioeconomic class) has everything to do with “the important conditions of life and the wide variety of experiences that unfold in life” (p. 240). Lazarus and Folkman call issues like these, such as race, “distal” variables that may have “proximal” meanings for “individuals with a special history and personality.” This conceptualization represents a limited view of social injustice; it forgoes the idea of change in the social order—individuals are simply situated where they are in the social structure and that affects how they experience life. The authors do not seem to recognize the injustices implicit in social stratification; they simply observe it, note it briefly, and handle it as if it is a benign fact of life. While the basic structure of stress and coping theory works for this study, the basic framework must be expanded to incorporate issues of social justice more centrally to suit this study’s purposes.
Walters, Simoni, and Evans-Campbell (2002) expand the basic model in a way useful to the current study. This modified version, designed to address the substance abuse of American Indians and Alaska Natives, takes into account the socio-historical experiences of an entire cultural group. This expands the model from its individualistic and Eurocentric origins to a more collectivistic, indigenist perspective (Walters et al., 2002). The authors adjust the model to mirror more accurately the unique experiences of a minority population existing within a majority population. In doing so, the authors account for the racism, discrimination, and oppression American Indians and Alaska Natives endure as the result of being vulnerable to the larger socio-cultural forces of the majority population.

True to its collectivistic aim, the revised model is targeted at the level of community, with American Indians and Alaska Natives as a group as its central focus. This is interesting in counterpoint to the original model, which is targeted at the level of the individual. The revised model starts with the basic constructs of stress, coping, and health outcomes, but redefines stress to include the minority group’s historical trauma and experiences with discrimination. Coping, then, focuses primarily on collective “cultural buffers” that can mediate communal stressors such as racism, discrimination, and oppression. Cultural buffers, in this model, are indigenous elements of social life such as family/community, spiritual coping, traditional health practices, identity attitudes, and enculturation. The authors imply that “culture is treatment” (McCormick, 2000, p. 30); that is, a return to indigenous cultural practices helps reduce stress caused by racial discrimination and ultimately improves physical and mental health and reduces substance
use. It should be added that this model postulates that socio-cultural stressors contribute to the population’s addiction and alcoholism problems.

This collectivistic version of the classic stress and coping paradigm is useful to the current study. Its application will allow for this study’s consideration of African Americans as a group; it will take into account oppression and discrimination as manifested by health disparities; the model will identify African-American spirituality as a cultural strength. African American spirituality is conceptually hypothesized to mediate the ill effects, on a macro level, of hostilities in the socio-cultural environment as well as the ill effects, on a micro level, of the stressors of alcohol addiction and early sobriety.

Pargament (1997) provides a further modification of the model useful to this study in his theory of religion and coping. While Walters et al. (2002) define coping in their model as a collection of cultural practices that includes spirituality, Pargament focuses specifically on the coping aspects of religion. Pargament defines religion broadly to include “both institutional religious expressions and personal religious expressions, such as feelings of spirituality, beliefs about the sacred, and religious practices” (p. 4). Pargament sees religion as more than just a coping strategy, but a part of a larger human need to appreciate “the incomprehensible, the unfathomable, and the uncontrollable” (p. 8). He understands religion as a complex human striving and a celebration of a way of life.

For example, while Pargament cites the preponderance of evidence that suggests people turn to religion in times of crisis, he gives equal time to results that suggest that for many, spirituality is central to daily life. He recognizes that, for these individuals, religiosity and spirituality are infused throughout all the vicissitudes of life—the good
times and the bad. Pargament’s most significant contribution to the present study is as follows: those who embrace spirituality and religiosity as fundamental to life are more likely to turn to religion and spirituality as coping mechanisms when life gets hard. This supports the idea that an ethno-cultural group with high levels of culturally-based spirituality and religiosity, such as African Americans, will use religious coping mechanisms to overcome adversity in ways different from others for whom religiosity and spirituality are not central to their cultural identity. In summary, Pargament’s contribution to this study is his specific emphasis on religious coping, his acknowledgement of its complexities, and his findings that religious and spiritual individuals and groups will use religious coping or spirituality more readily than will others.

Therefore, all three complementary models provide guidance for the study. The first posits the basic pathway of stress as experienced by an individual, mediated by coping, resulting in improved well-being. The second model adds the dynamic of collectivism. The same pathway is reconceived as an expression of the experience of an oppressed minority group, rather than the experience of an individual. Coping is achieved by a reliance on traditional cultural values and practices that buffer stressful environments. Finally, Pargament’s (1997) model focuses specifically on religious coping with a generous understanding of the depth and breadth of human spirituality. The models taken together provide a framework for thinking about stressors, oppression, spirituality, religiosity, the African American experience, and improved health outcomes including reduced substance abuse. While spirituality and religiosity can be conceptualized as mediators of favorable health outcomes, it is important to note that this
study does not test mediation; it tests moderation. Specifically, this study tests race as a moderator of the relationship between spirituality/religiosity and alcoholism treatment outcomes.
Literature Review

Definitions within the Conceptual Framework

Before reviewing the literature that supports this conceptual model, it is helpful to differentiate three related terms: spirituality, religiosity, and religious coping. It is also necessary to define stress, coping, and well-being.

Conceptual definitions of spirituality and religiosity are provided in Chapter 1. Operational definitions are provided in Chapter 3. Briefly, this study uses purpose in life as a proxy for spirituality, and uses Project MATCH’s “Purpose in Life” variable, collected via an instrument based on Frankl’s theory of logotherapy, developed in the 1960s. Religiosity is defined as engagement in religious practices such as thinking about God, prayer, meditation, attending worship service, reading scripture or holy writings, and direct experiences of God. This definition is closely modeled after the items on the instrument used in Project MATCH to measure religiosity (Connors, Tonigan, and Miller, 1996).

Religious coping, as discussed in Chapter 1, is defined broadly by Pargament to include elements of spirituality and religiosity: “both institutional religious expressions and personal religious expressions, such as feelings of spirituality, beliefs about the sacred, and religious practices” (p. 4).

The three constructs of stress, coping, and well-being are defined in this study as follows. Stress includes the stressors of alcoholism, early recovery, and the stressors of racism, discrimination, and oppression experienced by African Americans. In this paper, this compounded form of stress will be referred to simply as “stress.” Coping includes the use of spiritual and/or religious practices, as defined above, to face the challenges of daily
living including crises. In this paper, this form of coping, sometimes referred to as “purpose in life,” “spirituality,” or “religiosity” will be referred to collectively as “religious coping.” Well-being in this study refers to favorable drinking outcomes.

It is recognized that alcoholism is a subtype of the larger problem of substance abuse, which is a subtype of the larger problem of addiction. The Project MATCH study recruited subjects with primary alcohol abuse or dependence as participants. Those with addictions to marijuana other drugs were excluded from participation. Many studies under review here involve alcohol and other drugs. However, to stay true to the lines drawn by Project MATCH, in this paper, well-being will be referred to as “drinking outcomes.” Note this is often shorthand for “substance abuse outcomes” depending on the focus of a given study under review.

*Classification of Studies Reviewed*

The literature on stress-coping-wellbeing has much to contribute to the current study; however, few studies have explored religious coping and drinking outcomes with African Americans. Therefore, this review presents studies related to religious coping, ethnicity, and health outcomes broadly defined. The first set of studies describes the relationship between religious coping and drinking outcomes in the general population. These studies provide evidence for the connection between spirituality and addiction. They address various aspects of this association, including the rise in spirituality reported to take place during substance abuse treatment, the spiritual concerns of patients seeking treatment, the success of spiritual interventions in the addictions, spirituality as a predictor of favorable substance abuse treatment outcomes, and the inverse relationship
between drinking and drugging (and smoking) and spirituality. Studies supporting each of these ideas are presented.

The next set of studies feature religious coping and drinking outcomes with cultural, ethnic, or racial minority groups other than African Americans. This is followed by studies describing religious coping as a mediator for general health outcomes. Then, this same pathway is explored in studies with African Americans. Finally, studies examining African American religious coping and drinking outcomes are presented. Collectively, these bodies of literature form the foundation for the current research. Because of the current study’s interest in race, for each study discussed in this chapter, the racial breakdown of participants is reported.

Religious Coping and Drinking Outcomes: The Connection between Spirituality and Addiction

Until very recently, researchers were lamenting the paucity of studies on spirituality and addiction. This is no longer the case. Studies exploring many aspects of this relationship are now abundantly represented in the literature. The studies on spirituality and addiction address several general themes: 1. spirituality increases during the course of treatment, 2. patients have spiritual concerns and favor spiritual interventions, 3. spiritual interventions are successful, 4. patients with high levels of spirituality fare a little better in the long run, 5. spirituality and religiosity are negatively correlated with substance use, 6. spirituality and religiosity are positively correlated with recovery from addiction. Studies representing each of these themes are summarized below.
Spirituality increases during the course of treatment. Stewart & Koeske (2005) measured 70 patients who participated in one of two substance abuse treatment programs (one program was with the Veterans Administration and the other was a drug court treatment program offered as an alternative to criminal prosecution). The researchers explored whether spirituality and religiosity changed over the course of substance abuse treatment. They also explored possible associations between a number of variables such as treatment history, race, gender, drug choice, and religious affiliation. Participants were measured early in treatment (time 1) and at a later point in treatment (time 2) using three questionnaires designed to measure spirituality: the Multidimensional Measurement of Religiousness/Spirituality (MMRS), The Spiritual Well-Being Scale (SWB), and The Religious Orientation Scale (ROS). The MMRS has five subscales: spirituality, meaning, organized religiousness, guilt vs. God’s grace, and a loving personal God. The results indicated statistically significant increases in the spirituality and organized religion subscales and a statistically significant decrease in the guilt v. God’s grace subscale. Therefore, the measures of spirituality and religiosity indeed increased over the course of treatment, and there was a movement away from guilt and movement toward God’s grace. The only significant finding related to demographics was that African-American clients were more religious than whites on all subscale measures at time 1 and time 2.

A failing of the study is that changes in spirituality were not correlated with treatment outcomes (decreases in drinking and drugging) but rather were correlated with duration of time in treatment only. Also, results from the two different treatment groups were not analyzed separately; they were aggregated. Still, the study makes the interesting
point that as treatment progresses, scores on measures of spirituality and religiosity increase. Fifty-four percent of participants were African American; 44% were white.

Borman and Dixon (1998) compared two non-randomized groups of individuals in outpatient substance abuse treatment. One group attended outpatient therapy that used a 12-step orientation, and the other group attended outpatient therapy that used the Self-Management and Recovery Training (S.M.A.R.T.) orientation. The 12-step orientation is a spiritual program and S.M.A.R.T. is aspiritual. The authors hypothesized that the 12-step group would experience larger increases in spirituality than the S.M.A.R.T. group based on scores on the subscales of the Spiritual Well-Being Scale (which are the religious well-being and the existential well-being subscales). The study used a retrospective pretest/posttest format, but the specifics of this are not provided (such as, what point in time was considered “then” or time 1, and what time frame was considered “now” or time 2). Findings indicated that there were no differences in spirituality between the two groups, but that both groups reported increases in spirituality over time. Shortcomings of the study include no mention of the demographics of the sample and a small number of participants (42). Interestingly, this study offers evidence that increases in spirituality are evident whether participants are in AA or not. No information on the race of participants was provided.

Piedmont (2004) surveyed 56 substance abusers in an 8-week outpatient drug rehabilitation program. A major component of the program was vocational skill development and job search strategies. He administered a battery of questionnaires at intake and discharge that included one measure of spirituality (the Spiritual Transcendence Scale) and several measures of psychosocial functioning. Results
demonstrated that participants reported higher scores on spirituality measures at discharge than at intake, and these differences were statistically significant. Scores related to psychosocial functioning changed in the direction of improved functioning from intake to discharge as well, and these differences were statistically significant. This study supports the idea that spirituality scores increase during a treatment episode. A drawback of this study is that drinking and drug use were not studied as relevant variables. Eighty-five percent of participants were African American; 14% were white.

Mathew, Georgi, Wilson, and Mathew (1996) assessed changes in spirituality and religiosity among recovering individuals. They surveyed 62 individuals with at least six months of recovery and had them complete a questionnaire on spiritual and religious practices. Respondents reported data in two ways: as experienced in recovery and as experienced retrospectively during substance-abusing days. To support validity of the findings, a control group was recruited. Among the 61 control subjects, several (16) tested positive for alcoholism based on answers given in the questionnaire. This group of active alcoholics provided similar spirituality and religiosity scores to what the recovery groups reported as their experiences during their active drinking days. The non-alcoholics among the control group had higher scores than both of the other groups. During recovery, respondents’ reported higher levels of spirituality than they did for their drug using days. These recovery spirituality scores were higher than the scores of the controls who tested positive for alcoholism. While some data are retrospective, this study contributes to evidence that in recovery, levels of spirituality are higher than when actively abusing drugs or alcohol. No report of the race of participants was provided.
Piderman, Schneekloth, Pankratz, Maloney, & Altcuier (2007) conducted pre and post treatment assessments of 74 adults in a three-week outpatient addiction treatment program. Participants were administered the spiritual well being scale, the private religious practices scale, the abstinence self-efficacy scale, an AA affiliation scale, and a measure of positive religious coping. There were statistically significant increases in all measures after the three week period; therefore, levels of spirituality and religiosity increased over the course of treatment. Researchers reported 93% of the sample was white, but no information is provided about the race of the remaining 7% of the sample.

Patients have spiritual concerns and favor spiritual interventions. Carroll, McGinley, and Mack (2000) surveyed 200 clients in two inner-city therapeutic communities, one in Philadelphia and the other in New York City. One hundred respondents came from each city. Using the Substance Abuse Problem Checklist (SAPC), the researchers apparently administered the survey to respondents at intake, although this was not clear from their report. The SAPC is a checklist of items, each representing a possible problem an individual may be facing as the result of substance abuse problems. Twenty-six of the items on the checklist relate to spiritual or religious problems, and these items were the focus of this study. Eighty-three percent of respondents indicate at least some spiritual/religious problems, and these were equivalent for the New York and Philadelphia groups. Respondents indicated spiritual and religious problems that related to “a spiritual need, a yearning for something lost” (p. 87) and were more likely to choose items indicating the loss of a religious or spiritual value once held. These items most often checked represent lost faith, a longing for faith, and guilt, fear, and anxiety around
faith issues. A shortcoming of the study is the measure itself. Because it is a checklist it yields only dichotomous data indicating a presence or absence of a given problem; therefore, no information is available about the intensity with which respondents have these problems. The study draws attention to the fact that patients in treatment will likely have spiritual/religious problems that need addressing. Findings suggest drinking and drugging may be related to a loss of faith or religion. The study notes that spiritual/religious problems might be overlooked in secular treatment programs and that this could be a problematic oversight. The Philadelphia sample was 67% African American, the New York sample was 60% African American. Caucasians represented 29% and 6% of the samples from the two cities, respectively.

Arnold, Avants, Margolin, and Marcotte (2002) conducted focus groups with 21 patients in a methadone maintenance program, who were also abusing cocaine and heroin, to discover how spirituality is defined by this population and how relationships between spirituality, abstinence, harm reduction, and health promotion are perceived. They also studied the level of interest in a spiritually-based intervention by race, sex, and HIV status of participants. These 21 patients, along with an additional 26 patients from the same program, completed an additional questionnaire asking about these issues in a more quantitative fashion. Two themes emerged in the focus groups: spirituality as a source of strength, a source of protection of self, and spirituality as a source of altruism, a source of protection for others. Results from the questionnaire reflected participants were interested in spiritually-focused treatment. The questionnaire featured five items, each asking about the helpfulness of “treatment that addresses your spiritual and religious beliefs.” Median scores for the degree of helpfulness ranged from “a lot” to “extremely.”
African Americans did not report higher levels of spirituality than other racial groups; however, African American females had significantly higher mean scores on spirituality than African American males. Overall, this research demonstrates that patients have a strong interest in matters of the spirit, and strongly support the incorporation of spiritually-based programming in their treatment facilities. Twenty-three percent of the first sample were African American, 28% of the second sample were African American. Fifty-two percent of the first sample were Caucasian; 53% of the second sample were Caucasian.

McDowell, Galanter, Goldfarb, & Lifshutz (1996) surveyed 31 nurses and 101 of the dually diagnosed patients they care for. A battery of questions about spirituality was asked as well as interest in spiritual programs and spiritual ideas as they relate to treatment. There were a couple of surprising, and telling, findings. Patients reported that having “spiritual groups” and “access to religious services” was more important than better food, movies, or rooms. Nurses significantly underestimated patients’ value of “inner peace,” “belief in God,” “AA meetings,” and “spirituality,” assigning these lower scores than the patients themselves did. While the nurses and the patients had similar levels of spirituality, the nurses underestimated the levels of spirituality in their patients, who were mentally ill and severely addicted. This study emphasizes the patients’ spiritual needs and desires and suggests much more attention be paid to spirituality in assessment, counseling, and programming. Perhaps more than most clinicians or researchers realize, many clients have strong spiritual yearnings and are interested in treatment with spiritual content. Forty-six percent of the patients were African American; 16% of the nurses were
African American. Twenty-two percent of the patients were Caucasian; 32% of the nurses were Caucasian.

Dermatis, Guschwan, Galanter, and Bunt (2004) surveyed 322 individuals receiving substance abuse treatment in a residential therapeutic community (“TC”) to determine the extent to which clients want spiritually-based intervention included in the therapeutic community experience. Variables of interest included preference for spirituality based interventions, prior 12-step experience, spiritually-related personal characteristics, aspects of TC engagement, acceptance of TC principles, and length of time in the program. This was a cross-sectional survey. Seventy-four percent of clients believed the TC program should feature spirituality “a lot,” “very much,” or “a fair amount.” Clients believed that the 12-step approach should be more a part of treatment. It was found that personal spiritual orientation (frequency of prayer, belief in a higher power) correlated with endorsement of spiritually-based interventions. Therefore, the higher the level of personal spirituality, the stronger the endorsement for spiritually-based treatment. Prior AA experience was positively correlated with endorsement of AA in treatment. Perceived benefits of AA and NA were positively correlated with endorsement of featuring spirituality more in treatment. This research supports the idea that clients have a high regard and high interest in spiritually-based interventions. The researchers point out that despite the 74% endorsement for spiritually-based interventions, 11% of clients believed spirituality should not be featured in the therapeutic community’s treatment protocol. This indicates clients should be assessed about their spirituality and openness to spiritual interventions and the preferences of those who are not interested in spiritually-based treatment should be respected. While the authors in the narrative
description of their study indicated no demographic characteristics were associated with a spiritual inclination, the chart (p. 45) indicates a statistically significant association between race and spirituality, but does not provide more information in terms of which racial groups were more or less inclined toward spiritually-based interventions. Fifty-three percent of participants were African American; 19% were Caucasian.

_Spiritual interventions are successful._ Sterling et al. (2006) hypothesized that highly spiritual individuals would fare better in a more spiritual program, and less spiritual individuals would fare better in a less spiritual program, based on the idea the individuals would feel more comfortable in a program that mirrored their levels of spirituality. The spiritual program included many spiritual activities such as group discussions about spirituality, meetings with spiritual guides, periods of meditation, and accessibility to clergy. The other type did not have these spiritual components. Patients were assessed at intake to determine their level of incoming spirituality, and were classified into four categories of increasing spiritual disposition. Patients of all spirituality levels attended treatment at both programs. A strength of this study is its outcome measures. This study looked at three key outcome measures: whether the patient completed treatment (discharge status), abstinence self-efficacy, and desire to drink. A confounder to this study was that both types of programs featured AA. There was no support for the hypotheses. All patients did well in treatment. However, when patients who scored most high and most low in spirituality were compared, there were some interesting results. Patients with low spirituality when “matched” in the lower spiritual program fared most poorly. It seems all patients did well in the more spiritual programs, suggesting that spirituality is a valuable component to treatment no matter what the
individual’s incoming levels of spirituality may be. Eighty-five percent of participants were Caucasian; no information was given on the racial breakdown of the remaining participants.

Margolin, Avants, and Arnold (2005) conducted a randomized experiment with HIV positive patients in a methadone maintenance program who were also actively abusing cocaine and heroin. One focus of the study was to test acupuncture treatment, and another focus of the study was to test the efficacy of spiritual group therapy, which the last 15 participants in the study received. Patients were measured pre and post therapy for depression and anxiety and twice weekly during therapy for cocaine and heroin use. The spiritual intervention used was spiritual self-schema psychotherapy which combines cognitive-behavioral interventions with Buddhist psychology. There was no difference in outcomes based on the two acupuncture treatments, but those in the spirituality group were abstinent from heroin and cocaine longer, and had greater reductions in anxiety and depression than the other study participants. One drawback to this study is small sample size. Once participants were divided both by acupuncture treatment and then by presence or absence of spirituality group treatment, each group was small with 7-13 participants. Another drawback to this study is the absence of a “no treatment” control group receiving neither acupuncture nor spiritual group therapy. Finally, this study would be improved if it were possible to follow participants longitudinally to see if the differences at the conclusion of therapy were maintained over time. Forty percent of participants were African American, 35% were Caucasian.

Patients with higher levels of spirituality fare better. Kaskutas, Turk, Bond & Weisner (2003) conducted a study of 587 men and women and followed them from
intake to three years after discharge. The researchers explored which variables were significant in predicting a dichotomous outcome variable: one year of continuous sobriety at time 3 or not. Thirty-five percent of participants had been sober at least one year at time 3. Variables of interest were demographics, self-defined religiosity at intake, treatment characteristics, problem severity, and AA involvement. This study, like the current one, measures complete abstinence as the primary outcome variable, rather than measuring reduction of drinking frequency or intensity as is often the case in alcoholism research. They found that those who reported a spiritual experience at time 3 were more likely to have been sober one year at time 3. Of special interest to the current study, self-defined religiosity (whether participants considered themselves agnostic/atheist, unsure, religious, or spiritual at intake) did not predict abstinence at year 3. However, identifying as religious or spiritual at intake approached significance at 0.07 in predicting abstinence. This suggests a trend that lends support to the current thesis that those who have a spiritual or religious orientation at intake are more likely to do better in treatment and recovery. The authors report that non-whites report higher levels of spirituality and religiosity than whites in the study, and a table in the manuscript more specifically displays that black participants were more likely to self-identify as either spiritual or religious than the other non-whites in the sample. This study provides evidence that those who report a spiritual experience were more likely to be sober at three-years post discharge. Sixty percent of participants were Caucasian, no information is given for percent of participants who were African American.

Avants, Beitel, and Margolin (2005) tested a spiritual intervention designed to shift addicts’ self-schemas from a primary identification as “addicts” to a primary
identification as spiritual beings. The intervention is Buddhist but applicable to all and emphasizes doing no harm to self or others. The authors hypothesized that a shift in self-schema would ready an individual to better make use of what treatment has to offer. This is a non-randomized early phase of a larger study; it was designed to glean preliminary information about the therapy. All 29 participants were cocaine- and opioid-dependent clients at a methadone maintenance program. Outcomes were as follows. Statistically significant increases took place from pre- to post-treatment on the following spirituality subscales: daily spiritual experiences, private religious practice, religious/spiritual coping, and frequency of attendance at place of worship. Number of bags of cocaine and heroin used decreased significantly. Anecdotally, all but one respondent stated the therapy had a positive impact on recovery and motivation to prevent HIV. The risky behaviors questionnaire correlated significantly in expected directions with the schema test (which measured a change in self-schema) and with increases in daily spiritual experiences, indicating that the more spiritual the participants were the less likely they were to enact HIV risky behaviors. Abstinence was significantly correlated with increase in daily spiritual experiences and increased spiritual/religious coping. Compellingly, the study concludes with resounding endorsements from clients themselves. This study, while small, non-randomized, and exploratory, points to the potential of this spiritual intervention in substance abuse treatment. Twenty-four percent of participants were African American; 45% were Caucasian.

Benda (2002) surveyed 600 homeless substance abusers from a VA hospital treatment program, and followed them for two years. The researcher broadened the notion of “church attendance” to more finely differentiated variables such as spirituality,
forgiveness, and resilience. The outcome measure was survival: that is, length of time in the community before re-hospitalization for either substance abuse or mental illness. The following variables had the most significant impact on re-hospitalization rates in order from highest (most impact) to lowest (least impact) in predicted directions: Co-morbidity (co-existing mental illness), resilience, spirituality, self-efficacy, forgiveness, number of years of drug use, family attachment, and physical abuse. This study provides evidence that spirituality variables are important predictors for preventing relapse to substance abuse and mental illness. One drawback to the study is that many of the items measuring spirituality referred to Christian spirituality specifically, such as “Do you have a personal relationship with Jesus Christ?” and it is not clear whether all participants were of Christian faith. Forty percent of participants were African American; 41% were Caucasian.

Avants, Warburton & Margolin (2001) measured individuals who are HIV-positive and cocaine and heroin users at entry and discharge from a methadone maintenance program. The researchers used a single-item variable at intake to measure spirituality. This was a rating of the degree to which religion or spirituality provides a source of support or comfort. In a multiple regression analysis predicting number of weeks abstinent, several other key predictor variables were included such as addiction and psychiatric severity, social support, optimism, CD 4 count (a measure of HIV illness), methadone dosage, and attendance at counseling sessions. In this model, the spirituality variable, entered last as a block by itself contributed 11% to the adjusted R-square and was a significant and the strongest predictor of abstinence in the model. It was a better predictor of abstinence than psychiatric or medical severity, optimism, or social
support. In addition, participants with high ratings of spiritual and religious support were abstinent from illegal drugs significantly longer than patients with lower ratings. This study is relevant to the current research by demonstrating the significance of a spirituality variable in predicting a favorable substance abuse treatment outcome. Forty-nine percent of participants were African American; 40% were Caucasian.

*Spirituality and religiosity are negatively correlated with substance use.* A number of studies, many of them of the general population, note that people who are highly spiritual or religious are less likely to drink, use drugs, or even smoke cigarettes. Kendler et al. (1997) write, “both population studies…and clinical studies… have noted that religiosity is significantly and inversely related to alcohol and drug use” (p. 326). Conversely, those who are heavy users of drugs and alcohol tend not to be religious. Larson and Wilson (1980) studied the religious life of alcoholics. They found that 89% of the alcoholics in their sample reported losing interest in religion during their adolescence while their control group, made up of non-alcoholics, reported either an increase in religion (48%) or no change (32%). One of the most often-cited empirical studies that reflect this negative correlation is summarized below.

Kendler et al. (1997) surveyed Caucasian female twins who were part of a longitudinal study of genetic and environmental risks for a range of psychiatric disorders. They interviewed individuals who were either monozygotic or dizygotic twins and both members of 849 pairs, yielding a total sample of 1,902. The researchers explored the relationship between religiosity and psychiatric symptoms and alcohol and tobacco use. They also explored the extent to which religiosity buffers the depression associated with specific life events. Participants were assessed for a wide range of psychiatric problems
from depression and phobias to bulimia. The researchers defined three dimensions of religiosity and measured them separately: “personal conservatism,” a measure of the degree to which an individual personally subscribes to traditional, fundamentalist, and conservative religious ideas, “institutional conservatism,” a measure of how conservative a respondent’s religious denomination is, and “personal devotion,” a measure of frequency of church attendance, frequency of prayer, importance of religious beliefs, and other similar variables. They found that problem drinking was significantly negatively related with all three measures of religiosity. “Alcoholism” was significantly negatively related with “institutional conservatism,” and nicotine dependence was significantly negatively related with “personal devotion.”

The authors note there is a causal chain of events that individuals travel on the road to alcoholism that begins with not drinking, sometimes progresses to drinking, and sometimes progresses further to problem drinking. Given the authors’ careful differentiation of three dimensions of religiosity: “personal conservatism,” “personal devotion,” and “institutional conservatism,” the authors suggest the different dimensions may affect the causal chain of events at different points. Interestingly, they conclude, “traditional religious beliefs may be most important in the decision to ever use a substance, but religious devotion may particularly influence the ability to quit or maintain low levels of use” (p. 327). One final conclusion, given the breadth of the study that included a wide range of mental illnesses, is that “religiosity has a stronger relationship with substance use and abuse than with current or lifetime psychiatric symptoms or disorders” (p. 327). This study was conducted primarily on white participants.
Spirituality and religiosity are positively correlated with recovery. Many studies examine individuals in recovery; in order to find subjects, most survey members of Alcoholics Anonymous (“AA”) or other 12-step programs. Often, these studies are cross sectional and correlational. Data is gathered by distributing questionnaires at or after AA meetings. This is the case with the studies described in this section unless otherwise noted. Many of these studies had complex hypotheses and multiple variables; only the results related to spirituality are reported here. A summary of these studies and their findings follows.

Sherman and Fischer (2002) surveyed recovering substance abusers and found that those with more than nine months of sobriety had significantly higher levels of spirituality than those with less than nine months. Participants were recruited from AA meetings, residential recovery houses, and other individuals in the community. Data on race was not collected.

Sandoz (1999) surveyed 56 members of AA and found that having a spiritual experience was associated with greater length of sobriety, older age, and more AA service activities. Over 90% of the participants were Caucasian. No other information about the race of participants is provided.

Murray, Malcarne, and Goggin (2003) surveyed 144 AA members for an investigation on locus of control and recovery. Ninety-one percent of respondents reported spirituality was important to them. Five percent of their sample were African American, 89% were Caucasian.

Hendricks, Caldwell, and Katz (2003) surveyed 35 married couples where the men attended AA and the women attended Al-Anon. The study explored the relationships
among recovery processes, spiritual practices, marital satisfaction, and length of sobriety. In this study, the husband’s length of sobriety correlated to their spiritual practices ($r = .42$) and to the wives’ marital satisfaction ($r = .36$) and spiritual well-being ($r = .37$). No African Americans were sampled, although 1.5% identified as multiethnic; 90% of participants were Caucasian.

Zemore and Kaskutas (2004) surveyed 198 recovering alcoholics and found that length of sobriety correlated with both of the study’s spirituality variables: theism (experiences of God) and self-transcendence (perceptions of connection with others and the universe). Seven percent of their sample were African American, 83% were Caucasian. Sixty percent of the sample was recruited from AA, the rest was recruited from Women for Sobriety (a non-profit group serving women with addictions), Life Ring (a non-religious self-help recovery group), public and private treatment centers, and through personal connections with other participants or the researchers.

Poage, Ketzenberger, and Olson (2004) surveyed 53 AA members and found that length of sobriety was associated with spirituality, but not with increased contentment or decreased stress. Demographics from the sample were not reported.

Flynn, Joe, Broome, Simpson, and Brown (2003) surveyed 432 patients in outpatient methadone treatment programs. Participants were surveyed at admission and again five years later. After five years, the researchers divided their sample into the “recovery” group and “non-recovery group.” They found that for the recovery group, spirituality had “influenced their overall improvement very much” significantly more than it had for the non-recovery group. It is important to note that recovery group members were defined as those having less-than-daily alcohol use, but absence of opiate
and cocaine use. Thirty-nine percent of the sample were African American; 48% were Caucasian.

Jarusiewicz (2000) randomly formed two groups of former patients. One group represented those with at least a year of sobriety; the other group represented those who continually relapsed. Spirituality was measured with a quantitative survey and a qualitative questionnaire, later quantified, but the author does not report how. A cross-sectional survey displayed that the recovering group had significantly higher levels of spirituality than the relapsing group. While the number of subjects in this study (40) is low, its findings suggest that those who have stable recovery have higher levels of spirituality, and that those who relapse have lower levels of spirituality. No information is provided about racial breakdown of participants.

Davis and O’Neill (2005) conducted focus groups with 27 individuals in recovery. Participants were in later stages of substance abuse treatment and recruited from a treatment program. They asked participants to identify the conditions, skills, strategies, and attitudes that they most relied on to stay clean. Engaging in prayer and relying on a higher power made the list that also included maintaining stable housing, relying on positive social support, participating in meaningful activity, thinking differently about life, attempting to eat regularly, get sufficient sleep, and look presentable. Seventy-seven percent of the participants were African American; 22% were Caucasian.

Kubicek, Morgan, and Morrison (2002) interviewed 13 individuals in recovery—7 in AA and 6 not in AA (described as “spontaneous remitters”) and asked, “what contributes to successful recovery?” Participants were recruited from AA meetings, Rational Recovery meetings, doctors, ministers, and therapists for this qualitative study.
Interestingly, help from God or higher power made the list for both the AA members and the spontaneous remitters. All but three of the 13 participants identified “help from God or a higher power” as an element that contributes to successful recovery, and of these three, one was an AA member and two were not. It seems spirituality is part of the recovery experience whether one is in AA or not. Racial and ethnic demographics of the sample were not reported.

Although most of this body of research is correlational, collectively, these studies provide evidence of the links between spirituality and recovery. It seems spirituality, no matter how it is defined, tends to be correlated with abstinence and is expressed as important to individuals who have pursued a path of recovery from addiction. It is important to note the samples are predominantly white, and in some cases, race was inadequately reported or not reported at all.

Ethno-Cultural Studies

As mentioned earlier in this chapter, Walters et al. (2002) modified the basic stress and coping model to capture the experience of oppressed minority groups. A review of the literature found four studies using this ethno-cultural version of the model: two surveyed South Asian men and two surveyed Native Americans/Alaskan Natives. These studies are summarized below.

Morjaria and Orford (2002) surveyed five white male AA members and five South Asian males not in AA with between 2 months and 20 years of sobriety, all previous patients in substance abuse treatment programs. The authors sought to expand current knowledge of spirituality and addiction beyond what is seen in the typical studies of AA members. The authors were interested in the South Asian men’s spirituality
generated from their ethno-spiritual traditions—two were Sikh and three were Hindu—and the ways in which these traditions impacted sobriety, especially as compared with that of AA members. Key questions asked during the semi-structured interview included: 1. how the experience of recovery had impacted upon one’s purpose in life, 2. had treatment involved any discussion of spiritual aspects of life and if so how, and 3. participants’ beliefs concerning spirituality/religion and how these beliefs had impacted recovery. The authors formed two models of spirituality in recovery—one for South Asian participants and the other for AA participants. Both groups emphasized the important role of spirituality and religion in recovery. South Asian men underwent a reaffirmation of existing beliefs rather than a conversion experience described by AA members. The authors make several important points. The researchers talk about the South Asian participants tapping cultural values that were “already present in some form, but were now being deliberately accessed as a response to a crisis” (p. 243). South Asian participants who had used prayer did so now with greater conviction, and those who had not used prayer formerly began to do so. They saw their ability to stop drinking as evidence of the existence of God.

Several interesting comparisons between the groups warrant mention. The idea of “having faith” fit well with the South Asian group whose spirituality was internalized from childhood, whereas the idea of “developing faith” fit well with the AA group. For South Asian participants, religious beliefs and values were preexisting and unquestionable. They were right there ready to access. It seems the AA group members in this sample were less likely to have the background in faith the South Asian participants had. A sense of developing faith or becoming spiritual was not relevant—faith was there
to be accessed and being spiritual was self evident, an expression of the way things
already are. For the South Asian participants, their “religious beliefs were to some extent
culturally embedded within their world view” (p. 250). In general, this study resonates
with the current one in its idea that preexisting cultural religious and spiritual values can
serve as a strength during recovery from alcoholism.

Morjaria-Keval (2006) conducted a qualitative study of 15 Sikh men who were
abstinent from drinking and had successfully maintained this abstinence for at least four
months. This study took place in the U.K. Seven of the participants stated they changed
their drinking through religious and spiritual interventions alone. The starting point for
many began with seeking help from a priest of a Sikh temple and becoming increasingly
involved with the religious community. The spiritual change described by the participants
consisted of three categories: “religious adherence,” “seeking redemption,” and
“undergoing purification” (p. 100). Participants became re-involved in their temple
communities, living there for weeks while detoxing, undertaking vows to become a fully
practicing Sikh (“taking amrit”), and wearing the “Five K’s” to remind one’s self “that
your guru is with you all the time” (p. 100). Sikh practice also involved ongoing
purification of body and mind and a process of seeking redemption from the harms
casted by drinking. Participants described finding new meaning in life and a greater
feeling of purpose and fulfillment. Importantly, the author concludes,

“…specific minority ethnic communities such as those accessed in this research,
may have their own mechanisms for dealing with problems such as excessive
drinking. However, “natural” processes of change within these communities are
likely to be hidden through being embedded within a specific cultural context.
Exploring natural recovery processes across different ethnic groups may be an important way forward towards further deepening our understanding of change and recovery from addiction” (p. 114).

This important statement applies to the basic thesis of the current study.

Stone, Whitbeck, Chen, Johnson, and Olson’s (2006) study of Native Indians sampled individuals living on four American Indian reservations in the Midwest U.S. and five Canadian First Nation reserves. Researchers used logistic regression to predict alcohol cessation after a period of drinking (37% of the sample had stopped drinking). Those who never drank were excluded from the analysis. The researchers view addiction in the Native American community as caused by “colonization, discrimination, internalized racism, and prejudice” (p. 238). Enculturation is the “degree an individual is embedded in his or her cultural traditions as evidenced by traditional practices, traditional language, traditional spirituality, and cultural identity” (p. 237). Cultural identity, spirituality and other variables were found to be significant predictors of alcohol cessation. This study calls for placing alcoholism within a cultural context and provides evidence to support the incorporation of cultural practices and traditional spirituality in treatment.

Hazel and Mohatt (2001) responded to a group of Alaska Natives who attended a research symposium on alcoholism and criticized the lack of research on Native Americans and the negative portrayal of Native Americans when they were mentioned. The researchers conducted focus groups with community leaders and used these focus groups to inform an open-ended questionnaire that was then circulated more broadly. The authors put the problem of alcoholism in the context of larger socio-cultural and
historical factors including tensions between Native American culture and the larger majority culture. The authors argue for a macro perspective on alcohol problems in these communities.

The authors’ intent was to explore strengths in this community whose weaknesses, illness, and problems are more often emphasized, especially as related to the epidemic of alcoholism suffered by this group. Therefore, the focus of their study was sobriety, rather than addiction. Of the 78 participants, 44% mentioned spirituality as a source of support, and 43% of these mentioned Native culturally-based spirituality. Of her sobriety, one respondent wrote, “the return to our Native spiritual beliefs and my Grandmothers’ teaching has helped me the most” (p. 554). Others mentioned a more broad or Christian spirituality. In summary, the researchers devised a model of a Native worldview where spiritual and cultural elements help improve understanding of the sobriety process and provide insight into prevention. It is a holistic worldview involving an interrelatedness of all things and is fundamentally a community, rather than an individualistic model.

The generalizability of these studies to African Americans is, of course, limited. However, these studies are related to the current one in their emphasis on minority community strengths rather than deficits. They emphasize that culture and spirituality hold important clues for treatment, intervention, and prevention of alcoholism.

Religious Coping: Outcomes Other than Drinking

In the next set of studies, spirituality mediates stress, but the outcome measured is not alcoholism or substance abuse levels. Other health indicators are measured such as depression and mortality. The general population is surveyed.
Kendler, Gardner, and Prescott (1997) in their study of 1,902 female Caucasian twins cited earlier in this chapter explored the extent to which religiosity buffers the depression associated with specific life events. They found that the “personal devotion” variable (the degree to which an individual prays, meditates, and practices other personal spiritual or religious activities) predicted fewer depressed feelings associated with stressful life events.

Koenig et al (1992) studied 850 men treated for medical problems in a VA hospital. All participants were aged 65 and over and were without co-existing psychiatric diagnoses. Participants were admitted to the hospital for diagnoses of cancer, gastrointestinal disease, neurological disease, respiratory disease, renal disease, cardiovascular disease, or other illness. Interestingly, 20% of those surveyed stated religious thought or activity was the most important coping mechanism they used to face their medical illnesses. Of special significance to the current study are Koenig’s longitudinal findings. Six months after discharge, 202 participants were surveyed again. Religious coping, defined broadly to include “personal belief alone or … religious activity such as prayer or church attendance” (p. 1694), was the only variable measured at baseline that predicted lower scores of depression at follow up. In summary, religion was important to this group in coping with their illness, and religious activity seemed to mediate the depression often experienced in response to a serious medical condition. Twenty-eight percent of participants were African American. Black race was associated with higher levels of religious coping.

Pressman et al. (1990) surveyed 30 women aged 65 and older who had been treated surgically for broken hips. Outcome measures included levels of depression and,
interestingly, “ambulation status;” that is, the amount of assistance needed and the distance walked at discharge. Participants with stronger religious beliefs and practices were less depressed and had better ambulation status at discharge. Again it appears religious coping helps mediate the stressors of a health crisis, in this case, hip surgery, and improve outcomes—patients with stronger religious beliefs were less depressed and were able to walk further than those with weaker religious orientation. Racial breakdown of participants was not reported.

In addition to lower levels of depression and better ambulation outcomes, a study by Oxman, Freeman, and Manheimer (1995) suggests religiosity can play a role in extending length of life. Oxman et al. explored the relationships between social support and religiosity to mortality in a sample of 232 heart surgery patients aged 55 and older. Twenty-one of the participants died within six months of surgery. A host of variables were considered to be predictive of death. Biomedical predictors included older age, pre-surgery impairment in daily living skills, and previous cardiac surgery. The interesting findings were among the social support and religiosity variables. Those who reported a lack of participation in organized groups were three times likelier to die than those who affiliated with organized groups. Those who reported they gained no strength or comfort from religion were also three times likelier to die than those who reported gaining strength or comfort from religion. These relationships held even when biomedical variables were controlled for. This study suggests that lack of participation in groups and lack of strength and comfort in religion are related to risk of death in the six months following cardiac surgery. Again we see religion playing a mediating role, this time in
mortality of participants. In this study, 97% of participants were Caucasian; no information was given on the race of the remaining 3% of the sample.

Carmody, Reed, Kristeller, and Merriam (in press) surveyed 44 individuals who participated in an eight week mindfulness-based stress reduction program. Participants were measured pre and post intervention on a range of measures. One of these was the Medical Symptom Checklist, an instrument which lists 115 common medical symptoms. After the eight week program, the mean score on the symptom checklist decreased 27.64% (pretest mean = 21.25; posttest mean=15.48) suggesting a negative relationship between mindfulness-based stress reduction strategies and medical symptoms. No information about participants’ racial demographics was provided.

**African American Religious Coping: Outcomes Other than Drinking**

The next set of studies describes African American spirituality as a mediator for a range of outcomes including positive self-concept, stronger relationships, and other health outcomes.

Brome et al. (2000) conducted a cross-sectional survey of 146 African American women in recovery from substance abuse, although the outcomes measured in this study were not substance use outcomes. The researchers divided the sample into those with high and low levels of spirituality according to scores on the Spirituality Well-Being Scale. Then, the two groups were compared on several outcomes designed representing positive adjustment, strong relationships, and healthy coping. Women in the high spirituality group expressed more positive adjustment, stronger relationships, and healthier coping ability than women in the low spirituality group. This study is interesting because it looks at levels of spirituality within a sample of African American women. It
finds that those with high spirituality enjoy many other positive behavioral corollaries that suggest well-being than those in the sample with low levels of spirituality.

Interestingly, all of the women surveyed were in recovery. This study suggests there is variation among recovering African Americans in terms of levels of spirituality and that those with higher levels are more likely to reap other positive benefits in addition to sobriety.

Bowen-Reid and Harrell (2002) published a study that tested spirituality as a buffer between racism and stress-related health outcomes among African Americans. The researchers surveyed 155 African-American college students. The authors associate the psychological stress of racism to the kinds of chronic stress that can predict poor health outcomes. The authors hypothesized that spirituality would reduce stress and reveal itself to be a coping mechanism. The sample was administered the Spirituality Scale and a symptom checklist that measured a range of psychological and physical health outcomes. Spirituality proved to be a mediator of the stress caused by racism for three health outcomes. In a second step, researchers categorized participants into two groups: high spirituality and low spirituality, dividing the sample along the median. When the stress of racism was reported to be high (“extremely stressful”), having a high level of spirituality was associated with better psychological health outcomes. The authors conclude that spirituality is a mediator between the stress of racism and psychological health outcomes.

This study parallels the current one in several ways. First, it recognizes spirituality as a central element in African American culture. Second, it recognizes spirituality as a strength that can serve as a buffer of stress. Third, it postulates spirituality can improve psychological health outcomes. One drawback of the study is it surveys college-students,
which limits its generalizability. A second drawback is it does not offer a comparison group of white participants.

**African American Religious Coping and Substance Abuse Outcomes**

This final category describes African American spirituality and its relationship to substance abuse outcomes. Two studies, one qualitative and one quantitative were found.

Wright (2003) used phenomenological methodology to interview 15 African-American women in recovery whose sobriety ranged from 15 months to 12 years. The researchers position African-American women’s spirituality in a universal, rather than culturally-specific, worldview. They state, “the ameliorating effect of spirituality covering a broad range of positive outcomes has been consistent across populations, regardless of gender, race, study design, and religions affiliation” (p. 173). Participants were asked “to describe … experiences, thoughts, perceptions, and feelings of how spirituality contributed to your recovery,” to “describe an occasion or event during your substance abuse when you decided to use spirituality as part of your recovery,” and generally to respond to the question: “how significant is spirituality in your life?” (p. 177). Five themes emerged: 1. separation from God, 2. surrender, 3. reconnecting with self and community, 4. transformation, 5. spiritual maturation. These themes indeed seem universally spiritual and not culturally-specific, with the exception of participants’ frequent mention of Jesus Christ. While the researcher, in her literature review, referenced studies about minority women and church going during recovery, Afro-centric approaches to treatment and recovery, and mentions that spirituality is the cornerstone of activities in the African American community, neither the research questions nor the results point to culturally-specific relationships to spirituality. Unlike the study performed
by Hazel and Mohatt (2001), this study, despite the mention to the contrary in its literature review, seems acultural and apolitical with more of a micro than macro focus overall. In identifying spirituality as universally important, the study suggests spirituality is less an aspect of culture and more an aspect of the global human experience. While this study surveys African American women, its basic conclusion is that spirituality is greatly important to this population, but perhaps no more or no less so than any other group. Therefore, this study is useful to the current one in emphasizing the importance of spirituality to African American women in recovery, but lacks the more culturally-specific focus this study seeks to explore.

Krause (2003) interviewed a national sample of older white and black adults. He studied abstinence from alcohol and a number of dimensions of religiosity and spirituality. His outcome measure was dichotomous, representing older people who do not drink alcohol and older people who do drink alcohol. He found blacks were more likely to abstain from alcohol than whites. When he added affiliation with fundamentalist churches and deriving a sense of meaning from faith, the statistical significance by race disappeared. This means those affiliated with fundamentalist churches and those who derive a sense of meaning from religion are more likely not to drink. These variables, therefore, are the aspects of race that lead to differences in drinking behavior between blacks and whites. The findings tell us fundamentalist affiliation and deriving meaning from religion are two key variables that impact alcohol consumption, specifically abstinence from drinking.
Summary of Literature Review

Very recently, there was a scarcity of research on addiction and spirituality. The abundant number of studies in this review suggests the tide is turning.

This chapter proposes a modified version of stress and coping theory as the conceptual framework for this study. In the absence of an abundance of studies on African Americans, religious coping, and drinking outcomes, the literature reviewed in this chapter included studies of religious coping and drinking outcomes; ethno-cultural studies of religious coping and drinking outcomes; religious coping and outcomes other than drinking; African Americans and religious coping; and African Americans, religious coping, and drinking outcomes. Each of these categories of research shines light on different aspects of the conceptual model. The current study compares a sample of black and white alcoholics to test whether race moderates the relationship between spirituality and religiosity and alcoholism treatment outcomes using a subset of data from the Project MATCH study.
Chapter 3: Research Questions and Hypotheses

Introduction

To investigate the relationships among variables that describe the purpose in life, religiosity, and drinking behavior of black and white Project MATCH participants, five research questions are posed. The main research question examines whether race moderates the relationship between purpose in life/religiosity and drinking outcomes in this subset of Project MATCH.

This study considers purpose in life and religiosity as separate and distinct variables while recognizing they are conceptually linked as described in Chapters 1 and 2. This study considers its three outcome variables as separate and distinct variables: drinks per drinking day, percent days abstinent, and a dichotomous sobriety variable (described in detail below). Many variations in drinking behavior are of interest to research. According to Connors, Miller, Anton, and Tonigan (2003), “Total abstinence rate, latency to relapse, amount consumed on specific occasions, heavy drinking days, drinking with consequences, patterns of consumption, blood alcohol concentration (BAC) estimates, and an average consumption over specified time periods have all been used as outcome variables in alcoholism treatment research” (p 32). Drinks per drinking day, percent days abstinent, and the dichotomous sobriety variable capture a wide range of possibilities--from the individual who has one drink per day every day to the individual who drinks only once per month, but has 15 drinks on this occasion, to the individual who achieves six months of continuous sobriety, to everyone in between. Project MATCH selected drinks per drinking day and percent days abstinent to evaluate their hypotheses. A third outcome variable was created for this study. This is a dichotomous
variable indicating those who achieved six months’ continuous sobriety at the most distal data points available in the Public Use Data Set; that is, individuals who achieved complete abstinence during all of months 10, 11, 12, 13, 14, and 15. The dichotomous variable is coded “1” for those who achieved six months’ abstinence during this time frame and is coded “0” for all those who did not. In this study, drinks per drinking day and percent days abstinent are used to answer the first four research questions and the dichotomous sobriety variable is used to answer the fifth research question, as will be described below.

Current Study as Differentiated from Project MATCH

It is important to emphasize this study is not concerned with treatment types or the interaction between treatment types and patient characteristics, as was the Project MATCH study. In fact, treatment type as a variable (whether the respondent received cognitive-behavioral, twelve-step oriented, or motivational treatment) is excluded from this study. As all three treatments proved equally effective for the population overall (PMRG, 1997), and by ethnicity specifically (Tonigan, 2003), the variable is excluded as a covariate.

Research Questions

Question I: Do health and socioeconomic disparities exist between blacks and whites in this subset of the Project MATCH sample?

Hypothesis for Question I: Blacks will score lower than whites on measures of socioeconomic status, education, cognitive impairment, sociopathy, lifetime consequences of drinking, and drinking intensity at baseline.
Rationale for Question I Hypothesis: The existence of disparities between blacks and whites on a wide range of health and socioeconomic indicators is well substantiated (Annie Casey Foundation, 2006; Caetano, 2003; Galavan & Caetano, 2003; NIAAA, 1994; Office of Minority Health, 2007, January 25; Smedley, et al., 2003). Lowman and Le Fauve (2003) state that health disparities exist between blacks and whites in four large NIAAA funded alcoholism treatment trials. Therefore, it is predicted health and socioeconomic disparities will also be apparent in this subset of Project MATCH.

Question II: How does drinking change over time for both blacks and whites?

Hypotheses for Question II: Drinking intensity and drinking frequency will decrease equally over time for both blacks and whites.

Rationale for Question II Hypotheses: Participants in Project MATCH reduced drinking frequency and drinking intensity. All three of Project MATCH’s treatment types were equally effective. In addition, Lowman and La Fauve (2003) find blacks fare equally well to whites in four NIAAA-funded alcoholism treatment studies. Therefore, in this subset of Project MATCH, favorable drinking outcomes for blacks and whites are anticipated.

Question III: How do levels of purpose in life and religiosity compare between blacks and whites, and how do they change over time?

Hypotheses for Question III: Purpose in Life and religiosity will increase equally over time for blacks and whites. Blacks will have higher scores than whites on purpose in life and religiosity across all time periods.

Rationale for Question III Hypotheses: Spirituality and religiosity tend to increase as individuals undergo substance abuse treatment. A number of studies report that levels
of spirituality and religiosity are higher after a treatment episode than they were before (Borman & Dixon, 1998; Mathew et al., 1996; Piedmont, 2004; Stewart & Koeske, 2005). Further, a number of studies report blacks score higher than whites on measures of spirituality and religiosity (Heisel & Faulkner, 1982; Levin et al., 1994; Taylor et al., 1996). Therefore it is expected blacks will score higher than whites on measures of spirituality and religiosity over time in this subset of Project MATCH. While scores for blacks should remain higher at all time points than scores for whites, it is expected scores will increase for both groups on measures of purpose in life and religiosity.

Question IV: Is there a relationship between religiosity and drinking, and purpose in life and drinking, over time? How do these relationships vary by race?

Question IV Hypothesis 1: Higher purpose in life and religiosity scores will correlate with more favorable drinking outcomes. Specifically, higher purpose in life scores will correlate significantly with higher percent days abstinent scores and with lower drinks per drinking day scores. Also, higher religiosity scores will correlate significantly with higher percent days abstinent scores and lower drinks per drinking day scores.

Question IV Hypothesis 2: The correlations between purpose in life/religiosity and drinking outcomes will be stronger for blacks than whites.

Rationale for Question IV Hypotheses: In the literature, high levels of purpose in life and religiosity are negatively correlated with drinking, substance abuse, and smoking (Brizer, 1993; Kendler et al., 1997). Individuals who drink, smoke, and use drugs a great deal are less likely to be religious or spiritual, and highly spiritual or religious individuals are less likely to smoke, drink, or use drugs. In addition, increasing levels of purpose in
life and religiosity are associated with recovery from alcoholism and substance
dependence (Greene, Ball, Belcher & Mcalpine, 2003; Hendricks et al., 2003; Sandoz,
1999; Sherman & Fischer, 2002; Zemore & Kaskutas, 2004). Therefore, in this subset of
Project MATCH, a similar trend is anticipated. It is hypothesized that these associations
will be stronger for African Americans given the tendency for this group to have higher
scores on religiosity and spirituality measures (Heisel & Faulkner, 1982; Levin et al.,
1994; Taylor et al., 1996) and given the central role of religiosity and spirituality in
African American life (Bridges, 2001; Lincoln & Mamiya, 1990; Murphy et al., 1993;
Stewart, 1997).

Question V: Controlling for a set of covariates (education, race, site; baseline
measures of purpose in life, religiosity, and drinking behavior; 15 month measures of
purpose in life and religiosity), does race moderate the relationship between purpose in
life and drinking outcomes? Controlling for the same set of variables, does race moderate
the relationship between religiosity and drinking outcomes?

Question V Hypothesis 1: For every one unit increase in purpose in life, blacks
are more likely to achieve sobriety than whites.

Question V Hypothesis 2: For every one unit increase in religiosity, blacks are
more likely to achieve sobriety than whites.

Rationale for Question V Hypotheses: Researchers have hypothesized that blacks
recover from alcoholism via different pathways than whites (McCay et al., 2003). This
question explores the possibility that race moderates the relationship between purpose in
life/religiosity and sobriety more powerfully for African American participants.

Spirituality and religiosity have been found to serve as protective factors in health and
psychosocial research. They are associated with better health and well being outcomes in the general population (Kendler et al., 1997; Koenig et al., 1992; Pressman et al., 1990) and among African Americans specifically (Bowen-Reid & Harrell, 2002; Brome et al., 2000; Christian & Barbarin, 2001). Spirituality and religiosity are central to African American culture (Bridges, 2001; Lincoln & Mamiya, 1990; Murphy et al., 1993; Stewart, 1997). Blacks score higher than whites on measures of spirituality and religiosity in research studies (Heisel & Faulkner, 1982; Levin et al., 1994; Taylor et al., 1996). While higher scores do not indicate relationships between spirituality/religiosity and health outcomes will be stronger for blacks than whites, they do indicate strengths in the African American community that could promote favorable health outcomes. Based on this evidence from prior research, it is hypothesized that race moderates the relationship between purpose in life/religiosity and favorable alcoholism treatment outcomes.
Methodology

*Project MATCH*

This investigation is a secondary analysis of data from the Project MATCH research study. Project MATCH was a multi-site, randomized control trial that was planned, developed, and executed in the late 1980s and early 1990s. Planning and protocol development for the study began in 1989 and data collection began in April 1991 (Project MATCH Research Group, 1993). At the time of its development, it was the “largest clinical trial of a psychosocial treatment for alcoholism ever undertaken” (Longabaugh & Wirtz, 2001b, p. 4) and involved 1726 participants, 10 research units, and 10 universities. The study was funded by NIAAA. The data used in this dissertation is from the Project MATCH Public Use Data Set. Project MATCH de-identified and streamlined the data and made it available to qualified researchers via the Public Use Data Set. This data set is available free of charge. Researchers must complete an application and sign an agreement designed to preserve respondent confidentiality and to protect the integrity of the data (University of Connecticut Health Center, 2005). For a copy of the agreement, see Appendix B or the website of the University of Connecticut Health Center (1998): http://www.commed.uchc.edu/match/dataset/application.pdf.

The Public Use Data Set contains 15 months of data. All Project MATCH participants underwent alcoholism treatment in the first three months. Then, all participants were followed for a period of one year. Information about drinking was collected at baseline and monthly for 15 months (3 months of treatment followed by 12 months of follow-up). Purpose in life and religiosity data were collected at baseline, 3 months, 9 months, and 15 months.
Project MATCH was designed to test whether patients with certain characteristics would fare better with certain types of alcoholism treatment. Three types of treatment were featured in the study; however, comparison between treatment types was not of primary interest. Rather, the study of interaction effects between treatment type and patient characteristics were the chief focus of the study (Connors et al., 1994). Thus, comparisons between “matched” and “unmatched” participants could take place to see what advantages matching might offer (Del Boca, Mattson, Fuller, & Babor, 2003).

In the original study, several matching predictions were hypothesized: for example, that individuals with high psychopathology would do better with Motivational Enhancement Therapy or Twelve-Step Facilitation Therapy than with Cognitive Behavioral Coping Skills Therapy (Cooney, Anton, Carbonari, Carroll, Randall, & Roberts, 2001) or that women would do better in Cognitive Behavioral Coping Skills Training than in Twelve-Step Facilitation Therapy (Del Boca & Mattson, 2001). In total, Project MATCH tested 21 a priori client-treatment matching hypotheses (Kadden, Longabaugh, & Wirtz, 2003). (For a list of all the primary and secondary matching hypotheses and detailed descriptions of each, see Kadden et al., 2003).

It is important at this time to briefly mention the two original Project MATCH matching hypotheses that called for variables subsequently used in the current study. Project MATCH hypothesized that participants with higher levels of religiosity would have better outcomes with Twelve-Step treatment (Connors, Tonigan, & Miller, 2001). This hypothesis was not supported by Project MATCH research findings. The hypothesis necessitated the measurement of religious practices and observances. The resulting variable is used in the current study as a measure of religiosity.
A separate Project MATCH hypothesis articulated that participants with a weak sense of meaning in life but a strong desire to find meaning in life would do better with Twelve-Step treatment (Tonigan, Miller, & Connors, 2001). Partial support for this hypothesis was found in the aftercare arm of the study, but not in the outpatient arm (Tonigan et al., 2001). This hypothesis necessitated the measurement of purpose in life. The resulting variable is used in this study as a dimension of spirituality.

Project MATCH is conceptualized as not one, but two, parallel and equivalent studies each represented by an arm; one arm provided outpatient treatment, the other arm provided aftercare. Participants in the aftercare arm enrolled in the study immediately upon discharge from either an inpatient or intensive day hospital alcoholism rehabilitation program of at least 7 days duration (not including detoxification) (PMRG, 1997). Participants in the outpatient program enrolled in the study directly from the community without having had an intensive treatment experience immediately preceding enrollment. Those in the aftercare arm achieved better drinking outcomes than those in the outpatient arm in the Project MATCH study and in the subset of Project MATCH used in the current study.

The current study uses three of Project MATCH’s original sites: site 1 is an outpatient site and sites 7 and 8 are aftercare sites. Therefore, this study uses dummy variables for site 7 and site 8 to control for differences by both site and arm. This is described in more detail below.

To reflect the geographic and demographic diversity in the United States, Project MATCH was conducted in nine locations across the country. Outpatient sites were located in Albuquerque, NM, Buffalo, NY, Farmington, CT, Milwaukee, WI, and West
Haven, CT. Aftercare sites were located in Charleston, SC, Houston, TX, Milwaukee, WI, Providence, RI and Seattle, WA (PMRG, 1997). One city featured both an outpatient and an aftercare site; therefore, Project MATCH participants came from 10 sites. At one site, additional participants were recruited from an additional treatment facility in order to boost enrollment for that site. This additional treatment facility is counted as a separate site for data analysis purposes. Therefore, the Public Use Data Set includes 11 sites numbered 0-10 (B. Stout, personal communication, July 8, 2007). In the Public Use Data Set, the sites are identified only by number.

Project MATCH was a large, rigorous study. To gather baseline data before the treatment protocol began, study participants completed eight hours of interviews and self-administered questionnaires (PMRG, 1997). At five follow-up points (at 3, 6, 9, 12 and 15 months) more surveys were administered or readministered. Drinking outcomes were measured weekly for the first three months and then monthly thereafter. It was “one of the most exhaustive alcohol pretreatment and outcome assessment batteries ever undertaken” (Connors et al., 1994, p. 97). Much data was collected representing a multitude of variables.

In summary, participants participated at one of 10 sites in 9 locations across the country as either aftercare or outpatient participants. Participants were randomly assigned to one of three treatment types: cognitive behavioral coping skills therapy, motivational enhancement therapy, and twelve-step facilitation therapy. Random assignment was achieved using a computerized urn balancing program to ensure even distribution in each of the arms of the study and each of the three study treatments (CBT, MET, and TSF) of certain characteristics and demographics important to the matching hypotheses such as
age, gender, ethnicity (race), years of education, relationship/marital status, employment status, prior alcohol treatment, psychiatric severity, and symptoms of alcohol dependence (Tonigan, 2005). For a detailed description of each treatment type, see Donovan, Carroll, Kadden, DiClemente, and Rounsaville (2003).

Project MATCH data is nested: individuals are nested within treatment types, within sites, and finally within arms. As mentioned, the possibility exists that type, site, and/or arm differences may confound the relationships this study seeks to explore. In the current study, treatment type (CBT, TSF, and MET) is excluded from consideration as all three treatment types proved equally effective for the population overall (PMRG, 1997) and by ethnicity specifically (Tonigan, 2003). In this study, the aftercare and outpatient arms of the study are combined. Every effort was made by Project MATCH researchers to keep the two arms of the study in every other way identical. The outpatient and aftercare arms involved “identical randomization procedures, assessment instruments, treatment procedures, follow-up evaluations, matching hypotheses and analytic techniques” (PMRG, 1997, p. 8). In this study, the statistical analysis plan includes control variables for sites 7 and 8 to ensure results are not confounded by site and arm. Controlling for site also accounts for differences that are based on arm of the study.

As mentioned, Project MATCH tested 21 a priori client-treatment matching hypotheses (Kadden et al., 2003). In the end, there was evidence supporting only one hypothesis. In the outpatient arm of the study, clients with low psychiatric severity had more abstinent days after TSF than after CBT. For clients with high psychiatric severity, outcomes were the same for both treatment types. Motivation among outpatients and meaning-seeking among aftercare clients had time-dependent matching effects.
Therefore, the matching hypotheses were largely unsubstantiated. It was found that all participants fared equally well, regardless of the type of treatment administered. For a discussion of the lack of evidence found for matching hypotheses, see Longabaugh and Wirtz, 2001a.

Subjects

Multiple sites were selected for Project MATCH in order to achieve a large sample size, to account for diversity across the United States, and to facilitate rapid recruitment (Del Boca et al., 2003). Recruitment strategies varied by arm. For the outpatient arm of the study, subjects were recruited directly from the community via advertisements in the press and broadcast media (Zweben, Del Boca, Mattson, & McRee, 2003) and referrals from outpatient treatment programs. Outpatient treatment providers were made aware of the study via brochures and workshops provided by Project MATCH research staff. For the aftercare arm of the study, subjects were recruited from treatment programs offering inpatient or intensive day hospital treatment. To aid in recruitment, affiliations were forged between Project MATCH and a wide range of treatment facilities including private hospitals, VA facilities, and state-funded programs (Zweben et al., 2003). Participants in the aftercare arm were recruited from VA facilities in Charleston, SC; Houston, TX; Milwaukee, WI; New Haven, CT; and Seattle, WA, but subjects were recruited in each of these cities from other hospitals as well (B. Stout, personal communication, July 8, 2007). A two-year time frame was allocated for the task of recruitment. Special efforts were made to recruit women and people of color.

Inclusion and exclusion criteria for Project MATCH were extensive. Inclusion criteria included current DSM-III-R diagnosis of alcohol abuse or dependence; alcohol as
the primary drug of abuse; active drinking in the 3 months prior to the study; minimum age of 18; and minimum of a 6th grade reading level. Generally, interested participants agreed to accept assignment into any of the treatment conditions, lived a reasonable distance from the treatment facility, had transportation to the sessions, and completed detoxification where indicated.

Exclusion criteria included a DSM-III-R diagnosis of current dependence on sedative/hypnotic drugs, stimulants, cocaine or opiates; intravenous drug use in the prior 6 months; currently a danger to self or others; criminal justice (probation/parole) requirements that may interfere with study participation; lack of residential stability (important for follow-up); inability to identify one person who can help locate the respondent for follow-up; acute psychosis; severe organic impairment; concurrent involvement in another alcoholism treatment program (AA and 12-step group participation was permitted). Of note: Humphreys and Weisner (2000) specifically referenced the Project MATCH exclusion criteria as ones that would disproportionately exclude black participants.

Initial screening interviews were conducted with 2,193 prospective outpatient participants and 2,288 prospective aftercare participants. In the end, 952 outpatient participants and 774 aftercare participants enrolled in the study. They were interested in participation, met the inclusion criteria, and were not rejected based on exclusion criteria. In the outpatient arm, 80% were white, 6% were black, 12% were Hispanic, and 2% identified as “other.” In the aftercare arm, 80% were white, 15% were black, 3% were Hispanic, and 1% identified as “other.” Percentage of participants by race varies by arm for both the Project MATCH sample and the subset used in the current study. Blacks are
more likely to be in the aftercare arm, the arm with better results. Therefore, as mentioned, the statistical analysis plan will control for site (and thus arm) as well as race.

*Subjects of this Subset of Project MATCH*

A first step in working with the Project MATCH Public Use Data Set was to consider which participants should be included in the analysis. Because of the nature of the research question, participants identified as “Hispanic” or “Other” were removed from the data set. What remained was a subset of black and white participants.

Next, the proportion of blacks and whites at each site was examined. Each site was analyzed to determine which sites offer at least a 10% proportion of black participants. Then, sites with less than a 10% proportion of black participants were eliminated from the dataset, as their inclusion would limit generalizability. Table 1 includes only black and white participants and provides a site by site breakdown by race.

<table>
<thead>
<tr>
<th>Site #</th>
<th>Whites</th>
<th>Blacks</th>
<th>Percentage of Blacks (blacks/(blacks + whites))</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>105</td>
<td>4</td>
<td>3.670%</td>
</tr>
<tr>
<td>1</td>
<td>170</td>
<td>25</td>
<td>12.821%*</td>
</tr>
<tr>
<td>2</td>
<td>164</td>
<td>9</td>
<td>5.202%</td>
</tr>
<tr>
<td>3</td>
<td>71</td>
<td>7</td>
<td>8.974%</td>
</tr>
<tr>
<td>4</td>
<td>135</td>
<td>8</td>
<td>5.594%</td>
</tr>
<tr>
<td>5</td>
<td>188</td>
<td>8</td>
<td>4.082%</td>
</tr>
<tr>
<td>6</td>
<td>108</td>
<td>3</td>
<td>2.703%</td>
</tr>
<tr>
<td>7</td>
<td>128</td>
<td>44</td>
<td>25.581%*</td>
</tr>
<tr>
<td>8</td>
<td>113</td>
<td>47</td>
<td>29.375%*</td>
</tr>
<tr>
<td>9</td>
<td>51</td>
<td>5</td>
<td>8.929%</td>
</tr>
<tr>
<td>10</td>
<td>149</td>
<td>9</td>
<td>5.696%</td>
</tr>
<tr>
<td>Total</td>
<td>1382</td>
<td>169</td>
<td>10.896%</td>
</tr>
</tbody>
</table>

*Site included in the study

Black participants at sites 1, 7, and 8 represented at least 10% of the sample at those sites. Percentages of black participants at sites 1, 7, and 8 are 12.8%, 25.6%, and
29.4%, respectively. Eliminating the other sites reduced the total number of participants to 527. Of the final subset employed by this study, 40.8% of the sample came from site 1, 29.7% came from site 7, and 29.5% came from site 8. Site 1 was an outpatient site and sites 7 and 8 were aftercare sites.

Next, the data were examined for missing variables. It was determined that only those cases with complete data for key variables would be retained. That is, cases that had a complete set of data for each of the following variables were retained: race, percent days abstinent at baseline and at 15 months, drinks per drinking day at baseline and at 15 months, religiosity at baseline and at 15 months, purpose in life at baseline and at 15 months. This reduced the sample to 414, the final sample retained for analysis, representing 324 whites and 90 blacks. In the final sample, blacks represented 21.7% of the total.

The 113 eliminated cases were compared with the 414 retained cases on key variables. The two groups were equivalent on racial composition, purpose in life at baseline and at 15 months, religiosity at baseline and at 15 months, drinks per drinking day at 15 months, and percent days abstinent at baseline. Not surprisingly, the group representing eliminated cases drank more than the retained group of cases on two measures. The eliminated group drank more per drinking day at baseline (13.49 drinks versus 10.92), \( t(154.327) = 1.972, p = 0.05 \). The eliminated group also had lower percent days abstinent at month 15 (30% versus 36%), \( t(88.195) = 2.812, p = .006 \). This finding is not surprising. It suggests that those participants who were drinking more were more likely to have been absent on data collection occasions. Since these were the only variables in which the groups were different, and since there is a logical explanation for
the observed differences, it was decided to eliminate those cases and discuss the limitations to generalizability caused by this decision in this study’s discussion section (Chapter 5).

**Study Design and Procedures**

Great care was taken with all aspects of Project MATCH. Therapists were videotaped and their sessions with participants analyzed to ensure treatment fidelity. Reliability and validity of participants’ verbal and written reports were corroborated by collateral reports of participants’ friends and family and by biochemical measures. It was found that “a high degree of confidence can be placed in the accuracy of the verbal report data obtained in Project MATCH” (PMRG, 1997, p. 12). Rates of finding and interviewing participants at all follow-up points were excellent, with 90% of subjects providing data for all five key follow-up points.

In Project MATCH, the item asking about race of respondent was included in the Quick Screen interview, which was the first data collection instrument administered to prospective participants (Connors et al., 2003). Participants were asked, “What is your ethnicity?” (S. Tonigan, personal communication, September 14, 2007). The original response categories were white, Hispanic/Mexican, Hispanic/Puerto Rican, Other Hispanic, African American, American Indian, Asian American, and other. Later, researchers collapsed the Hispanic/Mexican, Hispanic/Puerto Rican, and Other Hispanic into one category, “Hispanic.” They also collapsed American Indian, Asian American, and other into one category, “other.” (S. Tonigan, personal communication, September 14, 2007). Therefore, the Public Use Data Set provides four categories for “ethnicity:” white, black, Hispanic, and other. Because of this study’s exclusive interest in a
comparison of black and white participants, participants identified as “Hispanic” and “other” were not included in the analysis.

Measures

Much information was collected about each Project MATCH respondent. Data was collected on many variables including ethnicity (race), gender, marital status, age, Hollingshead Occupational Code, employment status, years of formal education, psychiatric severity, cognitive impairment, meaning seeking, religiosity, purpose in life, motivation for change, sociopathy, social support for drinking, typology of alcoholism, AA involvement, self efficacy, social functioning, readiness for change, many measures of drinking behavior and consequences, and others.

The current study focuses on a number of independent and dependent variables. Many of the independent variables are included as control variables. The following variables were selected as of primary interest to this study: purpose in life (PIL), religiosity (RBB), race (black and white participants only), and drinking outcomes as measured by drinks per drinking day (DDD), percent days abstinent (PDA), and a dichotomous sobriety variable. Of these, the independent variables are race, religiosity and purpose in life. The dependent variables represent drinking outcomes.

Project MATCH provided a wealth of variables from which to identify important control variables. All possible variables were examined for their merit as possible control variables. Variables were included as controls if they were significantly different by race and by drinking outcomes, as indicated by t-tests or chi square tests.

The Religion variable would have been included in the multivariate analysis, but it was not a rich variable as it contained only three categories: Catholic, Protestant, and
Other. Further, there were two “Other” categories and it was not clear from the Public Use Data Set what these “Other” categories represented.

Alcoholics Anonymous involvement at baseline would have been a key variable to include; however, it was excluded. In the limitations section of this study (see Chapter 5), the absence of an AA variable is discussed. The Public Use Data Set did not provide an AA attendance and participation variable over time. It included only a baseline measure. Theory would certainly have dictated its inclusion; however, the variable was neither significant by race nor by sobriety outcome. Further, there was much missing data for this variable and its inclusion would have exceeded the maximum number of variables appropriate for logistic regression given the sample size. To test the importance of this variable, the logistic regression used in this study was run both with and without it. Its inclusion did not greatly change the model. Therefore it was excluded.

The control variables ultimately included in the multivariate analysis (used to answer Research Question V) are as follows: race, site, education, baseline purpose in life, baseline religiosity, and baseline drinking (as measured by baseline percent days abstinent). Fifteen-month measures of purpose in life and religiosity were also included as control variables and alternated as focal variables for the interaction terms.

The dependent variable used in the multivariate analysis is a dichotomous sobriety variable. To answer Research Questions II and IV, the drinks per drinking day and percent days abstinent variables were graphed as outcomes. In the multivariate analysis, the proposed moderation variable is race; the proposed focal independent variables are purpose in life at 15 months and religiosity at 15 months.
In addition, several additional variables were examined to answer Research Question I which explored health and socioeconomic disparities by race. These additional variables included socioeconomic status (measured by the Hollingshead occupational code), cognitive impairment, sociopathy, and lifetime consequences of drinking. Each variable is described in detail below.

**Independent Variables**

**Race.** As mentioned, the data in the Public Use Data Set reflect four racial categories: black, white, Hispanic, and other. In this study, only black and white participants are included. Participants self-identified their race.

**Purpose in life.** This variable is used in this study to represent the concept of “spirituality.” In Project MATCH, the variable was generated using Crumbaugh and Maholick’s (1964) Purpose in Life scale. The scale was developed based on logotherapy, the system of existential therapy developed by Viktor Frankl (Nehemkis, Macari, & Lettieri, 1978). The scale, while entitled “Purpose in Life,” is designed to measure the absence of “existential vacuum.” Existential vacuum is Frankl’s term for what one experiences when one fails to find meaning and purpose in life (Nehemkis et al., 1978). Lewis, Erlen, DeVito Dabbs, Breneman, and Cook (2006) write,

Frankl purports that the strongest motivation for living is the “will to meaning,” or the search to find meaning for human existence. Life never ceases to have meaning because individuals always have the opportunity to choose the manner in which they face adversity. Individuals with a strong sense of purpose in life have goals and a sense of direction, feel there is meaning to their lives, hold beliefs that give life purpose, and have aims and objectives for living. According to Frankl, an
individual who fails to find meaning and purpose that gives one’s life a unique sense of identity experiences a state of emptiness and potential psychiatric complications” (p. 51-52).

The Purpose in Live Scale is a 20-item measure that uses a 7-point Likert-type response format. Each item features anchors at either end of the 7 point continuum and asks participants to “circle the number that would be most nearly true for you” (Nehemkis et al., 1978, p. 125). The middle point, represented by the number 4 on the 1-7 point range, is labeled “neutral.” Examples of anchors are, from item 1: “I am usually… completely bored…exuberant, enthusiastic” where “completely bored” is scored 1 and “exuberant, enthusiastic” is scored 7. Another example is item 9: “My life is…empty, filled only with despair … running over with exciting good things.” Where “empty” is scored 1 and “running over” is scored 7. The scores on each item are summed to produce a total scale score with a range of 20-140. Higher scores indicate greater meaning and purpose in life.

Originally validated in the 1960s and 1970s (Crumbaugh, 1968; Crumbaugh & Maholick, 1964; Shean & Fechtmann, 1971), the scale has also been used in more recent research (Lewis et al., 2006; Lantz & Gregoire, 2000, Coward, 2003). The older studies found evidence for known-groups validity. Crumbaugh (1968) surveyed 1,151 individuals ranging from “successful business and professional personnel” to “college undergraduates” to “neurotics, hospitalized” to “psychotics, hospitalized” and found the Purpose in Life scale to meaningfully differentiate between “normal” and “psychiatric” groups. However, schizophrenics in his research scored unusually high; the author explains this by stating schizophrenics have high purpose in life related to their
delusional life and not in orientation to reality. Another of the older studies (Shean & Fechtmann, 1971) surveyed 55 undergraduate students, 27 of whom were weekly marihuana smokers. Shean and Fechtmann found marihuana users had lower purpose in life scores than the control group of non-marihuana users.

In more recent studies, evidence for the measure’s reliability is provided. Lewis et al. (2006) surveyed a convenience sample of 74 adults with AIDS in western Pennsylvania and found the Purpose in Life scale to have internal consistency as evidenced by Cronbach’s alpha of .91 for this sample. Because the Project MATCH Public Use Data Set did not provide item-level data for the measures, it was not possible to calculate Cronbach’s alpha for the scale in this subset of Project MATCH.

The scale was employed by Project MATCH in combination with another variable (Seeking of Noetic Goals) to form a new composite variable (Meaning Seeking) which was meant to represent an alcoholic’s emotional state of “hitting bottom” (Tonigan et al., 2001). It was originally hypothesized that those participants who had “hit bottom” at baseline would be more amenable to twelve-step therapy than to the other therapies. Some support for this finding was evident in the aftercare sample, but not in the outpatient sample (Tonigan et al., 2001).

Frankl’s concept of existential purpose in life relates closely to the definition of spirituality employed by this study (see Chapters 1 and 2); therefore, the Purpose in Life total scale score is employed by this study as a measure of spirituality.

The scale is available from Nehemkis et al., 1978 and is included in its entirety as Appendix C to this paper.
Religiosity. This variable is used in this study to represent the concept of
“religiosity.” This construct was measured in Project MATCH by the Religious
Background and Behavior questionnaire, which was developed specifically for the study
as a measure of religious behavior (Connors, Tonigan & Miller, 1996). The
questionnaire’s developers recognized religiosity is a multi-dimensional construct, and a
tfactor analysis of data from the questionnaire and 1,726 Project MATCH participants
yielded a two-factor solution: God Consciousness and Formal Practices, the details of
which are provided below. The questionnaire features 13 items. The scale is best
described by its developers:

On the 1st item, participants indicate the descriptor that best describes them:
atheist, agnostic, unsure, spiritual, religious. On the next 6 items, participants are
asked to indicate, on an 8-point Likert scale, the frequency with which they had
engaged in the following behaviors during the past year: thought about God, prayed, meditated, attended worship services, read-studied scriptures-holy
writings, and had direct experiences of God. The last 6 items tap these domains in
terms of lifetime occurrence on a 3-point ordinal scale. The item content was
intended to capture behaviors traditionally associated in the literature with
religiosity (Connors et al., 1996, pp. 91-92).
The first item was scored 0-4 based on the respondent’s selection ranging from atheist to
religious, summed with the remaining sections of the instrument. This strategy implies
“atheist, agnostic, unsure, spiritual, and religious” represent a continuum of increments
expressing increasing religiosity. This is arguable (it is not certain that “unsure” is more
religious than “agnostic,” for example) and represents a limitation to the measure. The
remaining sections were recoded such that a score of 1=0, 2=1, etc., to establish a scale scoring floor of zero rather than 13. The scores on the items were not standardized before they were aggregated. The possible range on the measure was 0-64. Higher scores meant greater levels of religiosity.

As mentioned earlier, the scale when factor analyzed yielded two factors: God Consciousness and Formal Practices. The God Consciousness items include items 2a, 2b, 3a, and 3b: “for the past year how often have you … thought about God” (item 2a), “for the past year how often have you…prayed” (item 2b), “have you ever in your life… believed in God” (item 3a), and “have you ever in your life prayed” (item 3b). All the other items about meditation, worship service attendance, studying scripture, and direct experiences of God were captured under the factor “Formal Practices.” In this study, the combined scale score is used. Project MATCH used the total scale score to test the matching hypothesis that involved religiosity (Connors et al., 2001).

Reliability for the scale in the full Project MATCH sample used Cronbach’s alpha and test-retest correlations (Connors et al., 2001). Cronbach’s alpha for the total scale score was (reported at the time of “test” and “retest”) was .85 and .86; for the God Consciousness factor .72 and .75; and for the Formal Practices factor .81 and .81. Test-retest correlations for the total scale score were .97, for the God Consciousness factor .94, and for the Formal Practices factor .96. Time elapsed between test and retest is not reported. Because item-level data was not available in the Public Use Data Set, it was not possible to calculate Cronbach’s alpha for the subset used in this study.

Evidence for convergent and divergent validity was reported for the full Project MATCH sample (Connors et al., 2001). Scores on the total scale and subscales for the
questionnaire were correlated with 15 other variables. Virtually no relationship was found between the questionnaire and age, education, depression, and various drinking measures, providing evidence for divergent validity. Associations were found between the questionnaire and various related measures of AA attendance, religious attendance, and purpose in life, providing evidence for convergent validity.

It is important to note in the subset of Project MATCH employed in this study, purpose in life at baseline is correlated significantly with religiosity at baseline at $r=0.135$ ($p<0.01$). At 15 months the correlation between the two variables is $r=0.204$ ($p<0.001$). These correlations, while significant, are low, indicating the two scales are measuring different constructs. The religiosity scale in its entirety is available in Connors et al., 1996 and is also reproduced in its entirety in Appendix D of this paper.

*Control Variables*

In the multivariate analysis of this study, a number of variables are included as covariates. These include site, education, and baseline drinking. Each will be described below.

*Study site.* As mentioned, three sites were retained in this subset of Project MATCH. This variable controls for variations that may have occurred between one site and another. One of these variations is “arm of the study.” Project MATCH featured two arms: outpatient and aftercare. In Project MATCH, aftercare participants had better drinking outcomes (they had experienced an inpatient treatment experience before Project MATCH participation). In this subset of Project MATCH, site 1 is an outpatient site, and sites 7 and 8 are aftercare sites. Therefore, it is important to control for the differences.
Two dummy variables were created for inclusion in the logistic regression model: site 7 and site 8. Site 1 served as the reference group.

*Education.* Education was measured as a continuous variable indicating years of education completed at baseline. A “12” indicated respondent was a high school graduate or had earned a GED. The maximum possible years of education was “17” indicating 17 or more years of education. This was a continuous measure. The sample ranged from having 2-17 years of education.

*Baseline Drinking.* The variable measuring percent days abstinent at baseline was used as an important covariate because baseline drinking will predict future drinking behavior.

*Additional Variables Used to Explore Differences by Race (Research Question I)*

As mentioned above, several additional variables were used to explore differences by race. These include socioeconomic status, cognitive impairment, sociopathy, psychopathology diagnosis, and lifetime consequences of drinking.

*Socioeconomic Status.* The Hollingshead Occupational Code instrument was used to measure occupational classification and serves in this study as a proxy for socioeconomic status. The Hollingshead measure was based on the participant’s own occupation. Occupational categories, and the numerical values assigned to them, included higher executives (coded 1), business managers (coded 2), administrative personnel (coded 3), clerical and sales (coded 4), skilled manual laborers (coded 5), semiskilled laborers (coded 6), unskilled laborers (coded 7), and homemakers (coded 8). These categories are meant to represent social stratification based on social status associated with each occupation. From first to last, the occupational categories represented
decreasing social status. Occupations with lower scores represent higher socioeconomic status, and the range is 1-8.

*Cognitive impairment* was a composite variable of three different measures: the Shipley Institute of Living Abstraction subscale, the Trail Making Test Part B, and the Symbol Digit Modalities Test (Kadden et al., 2003). Collectively, they measured attention, abstract reasoning, and cognitive flexibility. Higher scores indicated more cognitive impairment.

*Sociopathy* is a continuous variable measuring the extent to which a participant showed self-centered behavior and an inability to care about the wellbeing of others. Specifically, the term reflects personality traits such as “lack of remorse, incapacity for love, superficial charm, egocentricity, and poverty of affective reactions” (Kadden et al., 2003, p. 93), as well as behavior patterns such as “aggressiveness, repeated lying, recklessness, and failure to honor obligations” (p. 93). The construct was measured using a subscale of the California Psychological Inventory, a 46-item true/false measure (Gough, 1987). In Project MATCH, scores were inverted so that higher scores meant a greater degree of sociopathy (Kadden et al., 2001). The maximum possible score is 46 and the minimum 0.

*Lifetime Consequences of Drinking* is a subscale of The Drinker Inventory of Consequences instrument (Miller, Tonigan, and Longabaugh, 1995). This is a 50-item questionnaire in which respondents are asked if they had ever experienced a number of consequences of drinking, such as “My family or friends have worried or complained about my drinking” and “while drinking, I have said or done embarrassing things.” Respondents indicate whether they had or had not experienced each of the 50
consequences. Each “yes” answer was scored “1” and all answers were then summed to form a count of number of consequences of drinking the respondent had ever experienced. The highest possible score is 50 and the lowest 0. A higher score means the respondent experienced more consequences of drinking.

**Dependent Variables**

*Drinks per drinking day.* Drinks per drinking day (DDD) represents drinking intensity. It is a measure of the number of drinks a person drank on a given day when they did consume alcohol. To measure this variable, Project MATCH defined one standard drink as a 10-ounce beer, a 4-ounce glass of wine, 1.25 ounces of 80-proof liquor, or 1 ounce of 100-proof liquor (Miller, 1996). Data on this measure was obtained at baseline and monthly for 15 months.

Drinks per drinking day and another outcome variable “Percent Days Abstinent” (see below) were collected using Project MATCH’s “Form 90” using a time-line follow-back approach. Form 90 was developed for Project MATCH. It represents a family of instruments designed to provide information about participants’ alcohol consumption (Miller, 1996). “A central purpose of Form 90 is to collect reliable information about quantity, frequency, and pattern of alcohol consumption” (PMRG, 1993, p. 1137). Form 90 combined calendar memory cues and drinking estimation techniques to estimate drinking in the previous 90 days. Participants were shown a calendar and were asked to fill in events from their lives first and then to report on each day’s drinking behavior, using the events in their lives as triggers of memory (Miller, 1996). Drinks per drinking day were then averaged to produced a monthly mean drinks per drinking day score (PMRG, 1997). The range of scores on this measure was 0-60.
The Public Use Data Set provides two versions of data related to drinks per drinking day: raw and transformed scores. For Project MATCH, the scores on this variable were transformed to provide a variable of more normal distribution. The original variable without transformation produces highly skewed results because of a floor effect, especially after treatment has begun to work and individuals stop drinking: a number of participants will score zero on this measure indicating complete abstinence from alcohol. In Project MATCH, a square root transformation was used on this outcome variable to help normalize its distribution (PMRG, 1997). However, since the drinks per drinking day variable would be used in the current study to graph the data, it was determined that raw scores would be used.

Percent days abstinent. This is the other of the two primary outcome variables used in Project MATCH, and is another primary outcome variable used in this study. Percent days abstinent (PDA) represents drinking frequency. It is a measure of the percentage of days in the previous month when the respondent abstained from alcohol. This variable is used in the multivariate analysis as a baseline measure of drinking.

The Public Use Data Set provides two versions of data related to the percent days abstinent variable: raw and transformed scores. For Project MATCH, the scores on this variable were transformed to provide a variable of more normal distribution. The original variable without transformation produces highly skewed results because of a floor and, once treatment has begun to take effect, a ceiling effect: a number of participants will score 0% indicating they were not abstinent at all in the previous month (in other words, they drank daily) and a number of participants will score 100% indicating they were abstinent on 100% of the days of the previous month. In Project MATCH, an arcsin
transformation was used on this outcome variable to help normalize its distribution (PMRG, 1997). However, since the percent days abstinent variable would be used in the current study primarily to graph the data, it was determined that raw scores would be used.

Dichotomous Drinking Outcome. A new outcome variable was created for this study which identified those who had achieved 6 months of continuous abstinence from those who did not. As mentioned, drinks per drinking day and percent days abstinent did not yield a normal distribution of data. Various analytic approaches to solving this problem were considered, including data transformation (square root transformation and arcsin transformation were used in the original Project MATCH study) and the use of Poisson regression. However, the use of a dichotomous variable offered a compelling theoretical advantage. The dichotomous variable (separating those who had gotten “sober” from those who did not) allowed for the drinking outcomes in this study to be true to the disease model of alcoholism. Other alcoholism research groups have similarly used dichotomous outcome variables to asses those who had stopped drinking completely as distinct from those who did not. For example, Kaskutas et al. (2003) performed an alcoholism research study that predicted one year of 100% abstinence among the participants. The researchers had collected three years of longitudinal data post discharge. The authors classified those who had been sober one year, at three-years post discharge, as those who had stopped drinking, and classified all others as those who continued drinking. They ran a logistic regression model to predict this dichotomous variable, and tested several variables as possible predictors of the not-drinking outcome.
In the spirit of the Kaskutas et al. (2003) study, the current study also wished to measure outcomes in terms of the odds of achieving 100% abstinence over a substantial time period, rather than studying a reduction in drinking. This study recognizes the disease-model perspective of alcoholism acknowledging the only solution to the disease is daily, 100% abstinence from all addictive substances. Because many problem drinkers stop and start intermittently and repeatedly over time, outcome variables in alcoholism research often measure gradations in reduction in drinking (as is true with drinks per drinking day or percent days abstinent) rather than the achievement of 100% abstinence. While a reduction in drinking may cause less harm to the life of an alcoholic and their social world, it still represents active alcoholism and offers no protection from an acceleration in drinking behavior in the future. In fact, an inevitable acceleration in drinking is the most likely outcome even when an alcoholic is able to reduce drinking temporarily. The disease model of alcoholism implies that any ingestion of alcohol will lead inevitably to more destructive drinking. Therefore, the challenge of outcome data that was not normally distributed offered a key opportunity: to measure drinking outcomes in a manner more consistent with the disease model of alcoholism.

This study follows the precedent of the Kaskutas et al. (2003) study. The Public Use Data Set includes only one year of data post discharge. Therefore it was unrealistic to form a dichotomous variable predicting one year of continuous abstinence. However, it was determined six months’ continuous abstinence at the most distal data point would represent a significant period of abstinence worthy of testing in a logistic regression and serving as a viable dichotomous drinking outcome measure. In the variable constructed for the current study (identified as “Sober”), participants who achieved 100% sobriety
and reported zero drinks in each of the last six months of the data collection period (during months 10, 11, 12, 13, 14, and 15) were classified into a sober group and coded as “1” and all others were coded in the dichotomous variable as “0.” In the logistic regression performed in this study, 98 participants achieved six-months’ continuous sobriety representing 26.2% of the total subset, and 276 did not.

Data Analysis

For this study, data analysis strategies were sought which would make full use of the data we have and would maximize statistical precision as well as yield maximum information about purpose in life, religiosity, race, and drinking outcomes. The gift offered by Project MATCH is twofold. First, the data set offers statistical power with its large number of subjects. Second, the data set offers multiwave data; that is, change measured at several time points. Data analysis strategies were sought that could take full advantage of the strengths of the Project MATCH data set.

Preliminary Analyses

Descriptive statistics and univariate frequencies, including means, standard deviations, medians, and ranges were generated for the study variables. Binary logistic regression was selected as the statistical test for this study based on the dichotomous outcome variable. The data were analyzed to ensure they met the assumptions necessary for logistic regression analysis. Measures were sought to be reliable and valid. Univariate and multivariate outliers were examined and addressed. Independent variables were analyzed to ensure there would be no threat of multicollinearity. Distributions of cases within and across independent variables were examined to ensure an adequate number of cases for each value and each cell.
Bivariate relationships were examined to determine the direction and size of correlations. Predictor variables were correlated with each other to assess for problems of multicollinearity. The Pearson’s $r$ statistic or the Spearman’s $\rho$ statistic were used to measure the strength of the relationship between the variables depending on level of measurement. Variables were included as covariates in the logistic regression if the variable yielded statistically significant differences by race (whites and blacks) and by outcome (sober and not sober). T-tests and chi square tests were used to assess these relationships. Graphs depicting levels of purpose in life and religiosity and favorable versus unfavorable drinking outcomes were generated to provide information about change over time and relationships between purpose in life, religiosity, and drinking outcomes.

Binary logistic regressions were conducted to explore and compare predictors of the dichotomous drinking outcome variable. Logistic regression is a statistical test that is both similar and different from multiple regression. As in multiple regression, several predictor variables are regressed onto a dependent variable. However, what is predicted in logistic regression is a probability that an event will occur or not (Mertler & Vannatta, 2002). As such, logistic regression is based on probabilities, odds, and the logarithm of the odds, or logit (Mertler & Vannatta, 2002). The usual regression equation familiar from multiple regression is used in an equation to represent “the natural log of the probability of being in one group divided by the probability of being in the other group” (Mertler & Vannatta, 2002, p. 319). Logistic regressions do not require the same assumptions as multiple regression. Continuous and categorical levels of measurement
are appropriate for independent variables in logistic regression. Dependent variables in logistic regression are either multi-nominal or dichotomous (Mertler & Vannatta, 2002).

A separate logistic regression was performed for each pair of focal independent variables: purpose in life at 15 months and religiosity at 15 months. Appropriate interaction terms were generated for each model. The dummy variable “black” was multiplied by purpose in life at 15 months forming one interaction term, and the dummy variable for “black” was multiplied by religiosity at 15 months to form the other interaction term. The fifteen month measures of purpose in life and religiosity were used as they offered the point in time closest to the drinking outcomes being measured. This term represents the interaction of a continuous variable with a dummy variable.

Cohen, Cohen, West, and Aiken (2003) state, “when entered simultaneously with the original variables these interaction variables each reflect and test the difference between the slope for the group with a nonzero value and the reference group” (p. 375). In other words, this type of interaction variable reflects and tests the difference between the two groups depicted by the dummy variable—the nonzero group, the group coded “1” in this study is blacks, and the zero group, or reference group, coded “0” in this study is whites. The interaction term thereby compares the differences in the slopes between blacks and whites for purpose in life or religiosity as they predict drinking outcomes. In this way, interaction terms are a technique to test a moderation effect. To best explain this, a quote from Jaccard and Turrisi’s Interaction Effects in Multiple Regression (2003) is modified to include the key variables for the current study. Variables from the current study (and therefore not in the original example by Jaccard and Turrisi) are displayed in brackets:
In this framework, we are interested in whether the effect of the amount of purpose in life or religiosity on drinking outcomes is different for blacks and whites. Stated more formally, we are interested in whether the regression coefficient when regressing drinking outcomes on purpose in life or religiosity for blacks is different from the corresponding regression coefficient for whites. If the two slopes are identical, then the effects of purpose in life or religiosity on drinking outcomes are the same for blacks and whites and there is no interaction effect. However, if the slopes differ, then race moderates the impact of purpose in life and religiosity on drinking outcomes (p. 33).

Testing the Hypotheses of the Research Questions

Hypothesis for Question I: Blacks will score lower than whites on measures of socioeconomic status, education, cognitive impairment, sociopathy, lifetime consequences of drinking, and drinking intensity at baseline.

To test this hypothesis, t-tests and chi squares were calculated with race as the predictor. In the t-tests, Levene’s test was used to assess homogeneity of variances across groups. If the Levene’s test revealed unequal variances, then the appropriate t-test result was used to determine statistical significance between blacks and whites.

Hypotheses for Question II: Drinking intensity and drinking frequency will decrease equally over time for both blacks and whites.

To illustrate the trajectory of change over time, graphs were plotted to show comparisons between black and white participants. For these graphs depicting percent days abstinent and drinks per drinking day, 16 time points were plotted—baseline and monthly measures for 15 months. The x axis represents time, and the y axis drinking
outcomes. One-way ANOVAs were calculated at month 15 to determine statistically significant differences among groups.

Hypotheses for Question III: Purpose in Life and religiosity will increase equally over time for blacks and whites. Blacks will have higher scores than whites on purpose in life and religiosity across all time periods.

To illustrate the trajectory of change over time, graphs were plotted to show change over time comparing black and white participants. For these graphs depicting purpose in life and religiosity, 4 time points will be plotted—baseline, 3 months, 9 months, and 15 months. The x axis represents time, and the y axis scores on the purpose in life or religiosity measure. Separate lines are drawn for white and black participants to facilitate comparison. T-tests were conducted to determine statistical significance between groups.

Question IV Hypothesis 1: Higher purpose in life and religiosity scores will correlate with more favorable drinking outcomes. Specifically, higher purpose in life scores will correlate significantly with higher percent days abstinent scores and with lower drinks per drinking day scores. Also, higher religiosity scores will correlate significantly with higher percent days abstinent scores and lower drinks per drinking day scores.

Question IV Hypothesis 2: The correlations between purpose in life/religiosity and drinking outcomes will be stronger for blacks than whites.

To illustrate the trajectory of change over time, graphs were plotted to show comparisons between black and white participants. Graphs representing high, medium high, medium low, and low purpose in life and religiosity scores according to race were
plotted against the drinks per drinking day and percent days abstinent drinking outcomes. In addition to the static scores at time 15, change scores were also examined. To explore whether change scores yielded interesting information, graphs representing positive, negative, and no change in purpose in life and religiosity were plotted against drinking outcomes over time. These change scores were also be plotted by race. One-way ANOVAS were conducted at month 15 to determine statistically significant differences among groups.

To test the second hypothesis, correlations were run with purpose in life at month 15, religiosity at month 15, drinks per drinking day at month 15, and percent days abstinent at month 15. These were run first for the combined population of black and white participants, then for black and white participants separately, to allow for comparison of the strengths of the correlations between the two populations.

Question V Hypothesis 1: For every one unit increase in purpose in life, blacks are more likely to achieve sobriety than whites.

Question V Hypothesis 2: For every one unit increase in religiosity, blacks are more likely to achieve sobriety than whites.

As previously described, two logistic regressions were conducted to explore and compare predictors of the dichotomous drinking outcome variable and to ascertain the odds ratios and statistical significance of each independent variable in predicting the dichotomous dependent variable.

The dichotomous drinking outcome was regressed on two sets of predictor variables as follows. First, each of the focal independent variables was centered to improve the ability to interpret the constant and to minimize multicollinearity. The
centered variables were then used to construct the interaction terms. Covariates, focal independent variables, including the main effects of focal variables involved in the interaction term (purpose in life at 15 months or religiosity at 15 months), and the hypothesized moderator (a dummy variable for race), were entered in a first model. Then, in a second model, the cross product of the moderator and the purpose in life or religiosity term was entered. This procedure was repeated twice—one for purpose in life and once for religiosity. Moderator effects were indicated by a statistically significant finding representing the interaction term (Jaccard & Turrisi, 2003).

For the interaction terms that were statistically significant, a second test was run to decompose the interaction term. This test is a graphic depiction of the slopes comparing blacks and whites on purpose in life or religiosity. This graphing technique is described by Jaccard and Turrisi (2003). In this test, five regression equations representing a continuum of scores for purpose in life and religiosity are calculated and plotted for both blacks and whites using Microsoft Excel. The details of how the interaction was decomposed are included in Table 9. If the lines representing blacks and white scores are not parallel, an interaction effect is present in the data, indicating evidence that the relationship between the dichotomous drinking outcome variable and either purpose in life or religiosity is moderated by race.
Chapter 4: Findings

**Sample Characteristics**

Sample characteristics are described in Tables 2 and 3. Because of this study’s interest in the comparison of black and white participants, bivariate comparisons of black and white participants are presented alongside univariate results.

In this subset of Project MATCH, 78.3% of participants are white and 21.7% are black. Males make up 77.1% of the sample and females 22.9%. There is no statistically significant difference in gender by race. The mean age of participants is 40.82 with a standard deviation of 10.342. There is no statistically significant difference in age by race. In the combined sample, 30% are married, 8.5% are cohabitating, 24.6% divorced, 10.9% are separated, 3.1% are widowed, and 22.5% are never married. Nearly one-third (31.2%) of whites are married compared to 25.6% of blacks; 8% of whites are separated compared to 21.1% of blacks. Twenty-four percent of both blacks and whites are divorced.

Participants had a mean number of years of education of 13.24 with a standard deviation of 2.16. Whites had higher means for years of education than blacks: 13.25 compared with 12.88, and this difference is statistically significant $t(184.55) = 2.13, p = .034$. Nearly one-third of the sample had a high school diploma or GED; this was true for 32.7% of whites and 37.8% of blacks. Fourteen point three percent of the sample had four years of education beyond high school (this is not defined as having acquired a college degree); this was true for 16.4% of whites and 6.7% of blacks. Some participants reported completing at least some graduate study (reporting 17 years of education or more); this was true of 7.4% of whites and 2.2% of blacks.
Table 2. Descriptive Information for Interval-Level Variables for Black and White Participants in Subset of Project MATCH (N=414)

<table>
<thead>
<tr>
<th>Variables</th>
<th>Full sample</th>
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<th></th>
<th></th>
<th></th>
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<td>M</td>
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<td>Range</td>
<td>N</td>
<td>M</td>
<td>SD</td>
<td>Range</td>
<td>N</td>
<td>M</td>
<td>SD</td>
<td>Range</td>
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<td>2-17</td>
<td>90</td>
<td>12.88*</td>
<td>1.71</td>
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<td>324</td>
<td>13.35*</td>
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<td>2-17</td>
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<td>Hollingshead</td>
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<td>89</td>
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<td>315</td>
<td>4.28***</td>
<td>1.78</td>
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<td>.54</td>
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<td>.02</td>
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<td>PIL baseline</td>
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<td>99.47***</td>
<td>20.97</td>
<td>52-140</td>
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<td>90.67***</td>
<td>18.68</td>
<td>36-131</td>
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<td>PIL 15 Months</td>
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<td>20.398</td>
<td>37-140</td>
<td>90</td>
<td>105.32*</td>
<td>21.85</td>
<td>37-140</td>
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<td>100.31*</td>
<td>19.87</td>
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<td>Religiosity baseline</td>
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<td>11.097</td>
<td>16-71</td>
<td>90</td>
<td>45.22***</td>
<td>10.74</td>
<td>25-71</td>
<td>324</td>
<td>37.41***</td>
<td>10.60</td>
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<td>10.15</td>
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<td>89</td>
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<td>-5.28-10.66</td>
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<td>77</td>
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<td>33.56**</td>
<td>7.69</td>
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</tr>
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<td>10.918</td>
<td>1.34-58.58</td>
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<td>21.11**</td>
<td>12.38</td>
<td>1.34-58.58</td>
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<td>16.86**</td>
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<td>7.988</td>
<td>0-60</td>
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<td>6.31</td>
<td>8.47</td>
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<td>5.68</td>
<td>7.86</td>
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<td>.26</td>
<td>0-91</td>
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<td>PDA 15 months</td>
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<td>.75</td>
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<td>0-1.00</td>
<td>324</td>
<td>.71</td>
<td>.36</td>
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</table>

PIL= Purpose in Life, DDD=Drinks per drinking day, PDA=Percent days abstinent. T test compared black and white participants. *p<.05, **p<.01, ***p<.001
Table 3. Descriptive Information for Categorical Variables for Black and White Participants in Subset of Project MATCH (N=414)

<table>
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<tr>
<th>Gender</th>
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<th>Marital Status</th>
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<th>Percent</th>
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<tr>
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<td>27.1</td>
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<tr>
<td>Did not achieve 6 mo sobriety</td>
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<td>72.9</td>
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<td></td>
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<td>Achieved 6 mo sobriety</td>
<td>24</td>
<td>26.7</td>
</tr>
<tr>
<td>Did not achieve 6 mo sobriety</td>
<td>66</td>
<td>73.3</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Whites</td>
<td></td>
<td></td>
<td>Achieved 6 mo sobriety</td>
<td>88</td>
<td>27.2</td>
</tr>
<tr>
<td>Did not achieve 6 mo sobriety</td>
<td>236</td>
<td>72.8</td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>

Chi square tests compared black and white participants.

<sup>a</sup> The marital status data is presented for comparison only. Chi square statistics could not be run because some cells had less than 5 cases. Marital status was recoded into those who lived with a significant other (married, cohabitating, remarried) and those who did not (divorced, widowed, never married). There were no statistically significant differences by race on this new variable.

*<sup>p</sup><.05, **<sup>p</sup><.01, ***<sup>p</sup><.001
In terms of religious preference, 47.3% of the sample is Protestant, 25.4% is Catholic, and 21.7% identified as “other.” These differences varied widely by race, with more blacks identifying as Protestant and more whites identifying as Catholics (77.5% of blacks were Protestant compared with 39.5% of whites; 6.7% of blacks were Catholic compared with 30.6% of whites). These differences were statistically significant $X^2(2, N = 390) = 34.04, p < .001$. No details are provided in the Public Use Data Set about what is meant by “other” as it pertains to religion.

Blacks had significantly higher mean levels of baseline religiosity and baseline purpose in life than whites, (45.22 compared with 37.41 for religiosity, $t(412) = -6.165, p < .001$; 99.47 compared with 90.67 for purpose in life, $t(412) = -3.847, p < .001$). The mean score of blacks is significantly higher than that of whites for religiosity and purpose in life at 15 months as well: 33.07 compared with 25.89 for religiosity ($t(412) = -6.019, p < .001$), and 105.32 compared with 100.30 for purpose in life ($t(412) = -2.072, p = .039$).

In terms of baseline drinking frequency, blacks reported a monthly rate of 25.47 percent days abstinent and whites reported a monthly rate of 28.58 percent days abstinent. In other words, both blacks and whites drank approximately 21 days each month and abstained approximately seven days each month before treatment began. This difference at baseline was not statistically significant. Whites reported 70.89 percent days abstinent at month 15 and blacks reported 74.61 percent days abstinent at month 15. This difference at 15 months is not statistically significant, indicating that blacks and whites had equivalent outcomes.

In terms of drinking intensity, on a given drinking day at baseline, blacks drank an average of 21.1 drinks per day and whites drank an average of 16.9 drinks per day. This
difference was statistically significant \( t(412) = -3.300, p = .001 \). However, at 15 months, blacks reported drinking 6.30 drinks per drinking day and whites reported drinking 5.68 drinks per drinking day. This difference at 15 months was not statistically significant. In terms of the dichotomous outcome variable, 27.1% of the sample achieved six months of continuous sobriety and 72.9% did not. There were no statistically significant differences by race for this outcome.

*Key Variable Differences by Race and Outcome*

T-tests and chi squares were run to determine whether there were statistical differences on key variables by race and by outcome; that is, to see what variables were different between blacks and whites, and between those who achieved six month’s continuous sobriety and those who did not. The results of these analyses are found in Tables 2-5. Table 2 provides descriptive information for interval-level variables by race, Table 3 provides descriptive information for categorical variables by race, Table 4 provides descriptive information for interval-level variables by outcome, and Table 5 provides descriptive information for categorical variables by outcome.
### Table 4. Mean Differences on Dichotomous Dependent Variable by Select Interval-Level Independent Variables for Black and White Participants in Subset of Project MATCH (N=414)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Achieved Six Months Continuous Sobriety</th>
<th>Did Not Achieve Six Months Continuous Sobriety</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>mean</td>
<td>SD</td>
</tr>
<tr>
<td>Education</td>
<td>112</td>
<td>13.70</td>
<td>2.070</td>
</tr>
<tr>
<td>Motivation for Change</td>
<td>111</td>
<td>11.29</td>
<td>1.492</td>
</tr>
<tr>
<td>PIL 15 Months</td>
<td>112</td>
<td>109.33</td>
<td>15.97</td>
</tr>
<tr>
<td>Religiosity 15 Months</td>
<td>112</td>
<td>31.40</td>
<td>9.692</td>
</tr>
<tr>
<td>Depression</td>
<td>103</td>
<td>9.28</td>
<td>7.514</td>
</tr>
</tbody>
</table>

PIL=purpose in life; *<.05, **<.01, ***<.001

### Table 5. Mean Differences on Dichotomous Dependent Variable by Select Categorical Independent Variables for Black and White Participants in Subset of Project MATCH (N=414)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Achieved Six Months Continuous Sobriety</th>
<th>Did Not Achieve Six Months Continuous Sobriety</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number (percent)</td>
<td>Number (percent)</td>
<td></td>
</tr>
<tr>
<td>Site</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Site 1 (Outpatient)</td>
<td>34 (20.1%)</td>
<td>135 (79.9%)</td>
<td></td>
</tr>
<tr>
<td>Site 7 (Aftercare)</td>
<td>29 (23.6%)</td>
<td>94 (76.4%)</td>
<td></td>
</tr>
<tr>
<td>Site 8 (Aftercare)</td>
<td>49 (40.2%)</td>
<td>73 (59.8%)</td>
<td>*</td>
</tr>
</tbody>
</table>

*p<.05, **p<.01, ***p<.001
Preliminary Examination of Data

The first step in the data analysis was to run frequencies and descriptive statistics for all variables included in the analysis including mean, median, mode, standard deviation, and range. SPSS was used to run all statistical tests.

Logistic regression is used in this study to predict the probability of achieving six months sobriety. To address three of the important assumptions of logistic regression, the data were examined: to ensure adequate distribution of cases across independent variables, to determine the existence of multicollinearity, and to find and evaluate univariate and multivariate outliers.

An assumption of logistic regression is that the data provides an adequate distribution of cases across independent variables. This avoids the problem of sparseness of data (Cohen et al., 2003). This can be checked using crosstabs for nominal independent variables. This was done with all categorical data: race, sobriety, site 7 and site 8. It was found that the data met the assumptions for logistic regression.

To avoid sparseness of data and multicollinearity, a rule-of-thumb for logistic regression suggests no more than one independent variable for every 10 cases (Garson, n.d.). However, Garson points out that in the case of categorical independents, the rule-of-thumb should be applied to the smaller of the categorical groups. Therefore, in this study, where there are 90 black participants, the model should contain no more than nine independent variables. Thus, only key baseline variables, focal variables, and covariates that differ significantly by race and by outcome were retained for the model, resulting in 9 variables plus the interaction term.
Tests for multicollinearity were conducted. The correlation chart was studied to ascertain whether any two independent variables correlated at a high level. The only combination that came close was the correlation between baseline religiosity and 15 month religiosity at (.684). To test whether this would be a problem, a multiple regression was used to calculate colinearity statistics (tolerance and VIF) for all variables. The table of regression coefficients indicated that multicollinearity was not violated since tolerance statistics for all independent variables were greater than .1.

Both univariate and multivariate outliers were examined. Univariate outliers were examined for each key variable by first converting the variables into z scores. Outliers were identified if the z score was greater than + or – 3. (The cutoff of three standard deviations was used because the sample size of this study is greater than 80.) There were no univariate outliers for baseline religiosity, baseline purpose in life, baseline percent days abstinent, 15 month religiosity, and 15 month percent days abstinent. There was one outlier for purpose in life at 15 months. One individual had a low score of 37. However, the next closest score was 42 and that was within three standard deviations of the mean. Because Project MATCH data were meticulously coded and cleaned, and because this person’s score was not far lower than a nearby score that fell within the normal distribution, it was decided the case would be retained.

Data for drinks per drinking day both at baseline and 15 months contained outliers representing individuals who drank more in terms of quantity than three standard deviations above the mean for the sample. Seven individuals (4 black, 3 white) were outliers at baseline, drinking a range of 52-59 drinks per drinking day. Five individuals (1 black, 3 white) were outliers at 15 months, drinking a range of 31-60 drinks per drinking
day. One case was an outlier for both baseline and 15 month distributions. It was decided these cases would be retained in the analysis for the following reasons. First, Project MATCH data were carefully coded and cleaned; therefore, it is unlikely these outliers existed because of keystroke or other error—they genuinely represent real drinking behavior. Second, there was not one single, isolated outlier at baseline or 15 months. In both cases, there were a cluster of individuals drinking more than three standard deviations above the mean. This seems to represent, therefore, a genuine phenomenon related to drinking behavior. By definition, alcoholics drink compulsively. Alcoholics develop tolerance to alcohol allowing them the capacity to consume more and more over time. To eliminate these cases from a study of alcoholism because the participants drank too much is not logical. However, it was decided that percent days abstinent at baseline would be the measure used in the logistic regression as a control for baseline drinking, in part to avoid problems with outliers in logistic regression.

Multivariate outliers were explored by generating scores for standardized residuals for each case as part of the logistic regression run. Nine cases had standardized residual scores larger than 2.58 and were thus identified as multivariate outliers. Each of these cases was examined individually to explore what might be contributing to their high standardized residual scores. Variable by variable, it was observed that these nine cases had unusually excellent drinking outcomes. All nine had achieved six month’s continuous sobriety or more. Logistic regressions were run without these nine cases, and indeed, the regression diagnostics indicated a stronger model. But with the cases included the model was solidly viable based on several tests of the model diagnostics. Since no reason could be found to exclude any of the nine cases, and since it is important to include the data of
those who had excellent drinking outcomes, all nine cases were ultimately retained in the analysis.

Cronbach’s alpha would have been reported for all scales to provide a measure of internal consistency for this subset of Project MATCH; however, this was not possible as item-level data were not available in the Public Use Data Set. Table 2 and Table 3 report frequencies and descriptive information for all variables.

**Correlation Analysis**

Next, correlations were run among all variables of interest in the study. Correlations for variables that were normally distributed and at least of interval level were computed using Pearson’s $r$; all other correlations were computed using Spearman’s $\rho$. This was done to check for multicollinearity and to examine the relationships between variables. Correlations are presented in Table 6.
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<tr>
<th>Variables</th>
<th>1</th>
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<th>3</th>
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<th>11</th>
<th>12</th>
<th>13</th>
<th>14</th>
<th>15</th>
<th>16</th>
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<td>1. Gender</td>
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<td>6. Motivation</td>
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<td>7. Depression</td>
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<td>-.121*</td>
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<td>.101*</td>
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<td>9. PIL base.</td>
<td>-.071</td>
<td>.180***</td>
<td>-.116*</td>
<td>.181***</td>
<td>-.169**</td>
<td>-.039</td>
<td>-.607***</td>
<td>.034</td>
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<td>10. PIL 15 mo.</td>
<td>.034</td>
<td>.115*</td>
<td>.025</td>
<td>.148**</td>
<td>-.087</td>
<td>.004</td>
<td>-.388***</td>
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<td>11. Relg. base.</td>
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<td>.142**</td>
<td>.046</td>
<td>.044</td>
<td>.151***</td>
<td>.045</td>
<td>-.170**</td>
<td>.135**</td>
<td>.062</td>
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<td>12. Relg.15 mo.</td>
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<td>.278***</td>
<td>.112*</td>
<td>.060</td>
<td>.058</td>
<td>.137***</td>
<td>.063</td>
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<td>.120**</td>
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<td>.693***</td>
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<td>13. DDD base.</td>
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<td>.169**</td>
<td>-.026</td>
<td>-.200***</td>
<td>.232***</td>
<td>.133**</td>
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<td>.033</td>
<td>-.167**</td>
<td>-.125*</td>
<td>.115*</td>
<td>.143**</td>
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<td>14. DDD 15 mo.</td>
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<td>.007</td>
<td>.005</td>
<td>-.148**</td>
<td>.137**</td>
<td>-.028</td>
<td>.144**</td>
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<td>.268***</td>
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<td>15. PDA base.</td>
<td>.110*</td>
<td>-.039</td>
<td>-.161**</td>
<td>.000</td>
<td>.020</td>
<td>.078</td>
<td>-.053</td>
<td>-.193***</td>
<td>-.009</td>
<td>.046</td>
<td>.059</td>
<td>-.003</td>
<td>-.098</td>
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<td>16. PDA 15 mo.</td>
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<td>-.111*</td>
<td>.074</td>
<td>.023</td>
<td>.098*</td>
<td>-.047</td>
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<td>.097*</td>
<td>.223***</td>
<td>.046</td>
<td>.465***</td>
<td>.261***</td>
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</tr>
<tr>
<td>17. 6 mo. Sob.*</td>
<td>.081</td>
<td>-.005</td>
<td>-.020</td>
<td>.126**</td>
<td>-.077</td>
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<td>.237***</td>
<td>-.037</td>
<td>-.625***</td>
<td>.068</td>
<td>.625***</td>
</tr>
</tbody>
</table>

* p<.05. ** p<.01. *** p<.001.
a For these dichotomous variables, correlations were computed using Spearman’s rho. All other correlations are calculated using Pearson’s r.
Creation of New Variables

The next step was to create new variables necessary to visualize the data and answer Research Questions II-IV. The purpose in life score at month 15, which measures the degree to which a respondent feels a higher purpose in life 15 months post intake, was plotted using a histogram. Using the frequency distribution chart, the data were divided into four approximately equal groups based on percent of cases representing those with high, medium high, medium low, and low scores. Low scores ranged from 37-87, medium low from 88-103, medium high from 104-116, and high from 117-140. Approximately 25% of participants populated each group: 113 had high scores, 98 medium high, 99 medium low, and 104 low. A new nominal-level variable was created with four categories: high, medium high, medium low, and low. To examine the differences by race for each of these groupings, a second nominal-level variable was created with eight categories: blacks with high scores, whites with high scores, blacks with medium high scores, whites with medium high scores, blacks with medium low scores, whites with medium low scores, blacks with low scores, and whites with low scores. Thirty-one blacks (34%) and 82 whites (25%) had high scores, 24 blacks (27%) and 74 whites (23%) had medium high scores, 16 blacks (18%) and 83 whites (26%) had medium low scores, and 19 blacks (21%) and 85 whites (26%) had low scores. These variables were created to aid in data visualization. One-way ANOVAS were also calculated to determine statistically significant differences between groups at month 15.

The same steps were repeated for the religiosity variable resulting in two additional variables. Using a frequency distribution chart, the data for 15 month
religiosity scores were divided into four approximately equal groups based on percentage representing those with high, medium high, medium low, and low scores. Low scores ranged from 7-19, medium low from 20-26, medium high from 27-34, and high from 35-51. One hundred ten participants had high scores, 110 medium high, 90 medium low, and 104 low. A new nominal-level variable with four categories was created. The categories were high, medium high, medium low, and low. To examine the differences by race for each of these groupings, a second nominal-level variable with eight categories was created. These categories were blacks with high scores, whites with high scores, blacks with medium high scores, whites with medium high scores, blacks with medium low scores, whites with medium low scores, blacks with low scores, and whites with low scores. Forty-two blacks (47%) and 68 whites (21%) had high scores, 22 blacks (24%) and 88 whites (27%) had medium high scores, 17 blacks (19%) and 73 whites (23%) had medium low scores, and 9 blacks (10%) and 95 whites (29%) had low scores. Differences by race are evident: 47% of blacks had high scores compared to only 21% of whites; only 10% of blacks had low scores compared to 29% of whites, indicating at month 15 blacks are more religious than whites.

To examine data in an additional way, change scores for purpose in life and religiosity were calculated. These scores were calculated by subtracting baseline purpose in life scores from 15 month purpose in life scores (PIL15-PIL), and likewise, by subtracting baseline religiosity scores from 15 month religiosity scores (Religiosity 15-religiosity). From these continuous variables, categorical variables were formed. A positive score indicated that purpose in life or religiosity had increased. A negative score indicated that purpose in life or religiosity had decreased. In the purpose in life variable,
those whose purpose in life score increased were coded “1,” those whose purpose in life remained the same were coded “2,” and those whose purpose in life decreased were coded “3.” (Those whose change score ranged from -5 through 5 were considered to have had no change). In the religiosity variable, those whose religiosity score increased were coded “1,” those whose religiosity remained the same were coded “2,” and those whose religiosity decreased were coded “3.” (Those whose change score ranged from -2 to 2 on this variable were considered to have had no change).

It is timely to recall that on the whole, purpose in life scores increased for the majority of participants and religiosity scores decreased for the majority of participants. Indeed, purpose in life scores increased for 56.5% of the sample, whereas religiosity scores increased for only 6% of the sample. Purpose in life scores decreased for 18.4% of the sample, while, strikingly, religiosity scores decreased for 87.2% of the sample. (Purpose in life scores remained the same for 25.1% of the sample; religiosity scores remained the same for 6.8% of the sample.) Observations about the sample whose religiosity increased or remained the same should be made with caution because the sample size for those groups is small.

In addition, a dichotomous drinking outcome variable was created for use in the multivariate analysis. As mentioned, those reporting no drinks per drinking day for any day in months 10, 11, 12, 13, 14, and 15 were coded “1” and all others were coded “0.” This is the primary drinking outcome for this study and the outcome variable used in the logistic regression.

Several dummy variables were created to enable nominal independent variables to be entered into the binary logistic regression model. Race was recoded into a dummy
variable where blacks were coded 1 and whites were coded 0. Whites served as the reference group. The site variable, a nominal variable with three categories, was recoded into two dummy variables: site 7, where site 7 = 1 and all else was coded 0, and site 8, where site 8 was coded 1 and all else was coded 0. Site 1 served as the reference group for both dummy variables. Sites 7 and 8 were aftercare sites; site 1 was an outpatient site.

Finally, two interaction terms were calculated. Each represented a nominal variable multiplied by a continuous variable. The dummy variable for black was multiplied by the centered purpose in life at 15 months variable to create one interaction term, the dummy variable for black was multiplied by the centered religiosity at 15 months variable to create the other interaction term.

*Findings Question I*

**Question I:** Do health and socioeconomic disparities exist between blacks and whites in this subset of the Project MATCH sample?

**Hypothesis for Question I:** Blacks will score lower than whites on measures of socioeconomic status, education, cognitive impairment, sociopathy, lifetime consequences of drinking, and drinking intensity at baseline.

**Findings Question I:** As displayed in Tables 2 and 3, health and socioeconomic disparities exist between blacks and whites in this subset of Project MATCH; however, blacks are not always the group doing more poorly. Blacks have less education than whites $t(184.55) = 2.13, p = .034$, and their Hollingshead occupational scores indicate lower socioeconomic status $t(161.15) = -5.94, p < .001$. Blacks have higher levels of drinking intensity than whites at intake; they drink more on drinking occasions than whites do $t(412) = -3.300, p = .001$. In addition, blacks exhibit more cognitive
impairment compared to whites $t(410) = -8.61, p < .001$. However, whites have higher scores of sociopathy $t(411) = 2.09, p = .037$ and report more lifetime consequences of drinking $t(378) = 2.94, p = .004$. In summary, there are health and socioeconomic differences by race in this subsample. Blacks have less education, lower socioeconomic status, and higher levels of cognitive impairment. Whites have higher levels of sociopathy and more lifetime consequences of drinking.

**Findings Question II**

**Question II:** How does drinking change over time for both blacks and whites?

**Hypotheses for Question II:** Drinking intensity and drinking frequency will decrease equally over time for both blacks and whites.

**Findings Question II:** Figures 2 and 3 provide visualizations of the data as they relate to this question. Figure 2 displays the drinks per drinking day variable measured monthly from baseline to 15 months. As mentioned, drinks per drinking day is a measure of drinking intensity. A sharp decrease in drinks per drinking day is noted for the sample in the first month, which corresponds with the first month of treatment. This is followed by a steady increase in drinks per drinking day until month 7. At this point, drinking intensity levels off for whites and fluctuates with slightly more variability for blacks. The figure displays that both white and black participants reduced their drinks per drinking day and maintained the improvement for a year after treatment ended. While blacks drink more than whites at intake, the patterns by race are similar for the remaining time periods. At 15 months, blacks drank more than whites when they did drink (6.31 drinks per drinking day compared with 5.68 drinks per drinking day), but the difference is not statistically significant.
Figure 2. Drinks per Drinking Day Over Time for Black and White Participants (N=414)
Figure 3 depicts change over time in percent days abstinent. The reader is reminded that percent days abstinent is a measure of drinking frequency. Again a sharp increase in percent days abstinent is noticed in the first month of treatment. This is followed by a gradual decrease in percent days abstinent until approximately month 6 followed by a leveling-off pattern. Figure 3 demonstrates that blacks and whites show an improvement in percent days abstinent that remains in effect until one year post treatment. Blacks achieve higher percent days abstinent than whites, but at 15 months, this difference is not statistically significant.

Figure 3. Percent Days Abstinent Over Time for Black and White Participants (N=414)

Therefore, drinking intensity and drinking frequency both decrease substantially for blacks and whites in this subset of Project MATCH.
Findings Question III

Question III: How do levels of purpose in life and religiosity compare between blacks and whites, and how do they change over time?

Hypotheses for Question III: Purpose in Life and religiosity will increase equally over time for blacks and whites. Blacks will have higher scores than whites on purpose in life and religiosity across all time periods.

Findings for Question III: Figure 4 represents the change over time for purpose in life for the combined population. During the first three months, the period when treatment is taking place, a marked increase in purpose in life is noted, followed by a period of stability for the remaining months representing the year after treatment ended. Therefore, purpose in life increases on average during the first three months, coinciding with the treatment period, and gains in purpose in life are maintained for a period of at least one year.

Figure 4. Purpose in Life Change Over Time for Combined Sample of Black and White Participants in Subset of Project MATCH (N=414)
Figure 5 represents change over time for religiosity for the combined sample. Here, in the first three months that coincide with the treatment period, a marked decrease in religiosity is observed followed by a period in which religiosity remains relatively low during the following one year.

Figure 5. Religiosity Change Over Time for Combined Sample of Black and White Participants in Subset of Project MATCH (N=414)
Figure 6 represents change over time for purpose in life by race. The increase appears less steep than in Figure 4 because of the way in which the charts are calibrated. However, once the data is divided by race, the pattern of change over time appears parallel. At each time point, blacks have higher rates of purpose in life than whites, but the pattern of change is similar. Both groups show an increase in purpose in life over the first three months coinciding with treatment followed by maintenance of these higher scores for the year following treatment. Blacks’ scores remain higher than whites’ scores throughout. This difference is statistically significant at baseline \((p < .001)\) and at month 15 \((p = .039)\).

Figure 6. Purpose in Life Change over Time for Black and White Participants in Subset of Project MATCH (N=414; n=324 whites; n=90 blacks)
Figure 7 represents change over time in religiosity scores by race. For both whites and blacks, religiosity scores decrease in the first three months that coincide with treatment, followed by a period of relative lower scores for the one year following treatment termination. Blacks have higher religiosity scores than whites over time. The pattern of change over time is similar for blacks and whites, and the patterns of change are parallel to one another. The difference by race is statistically significant at baseline ($p < .001$) and at 15 months ($p < .001$).

Findings Question IV, Hypotheses 1-2

*Question IV: Is there a relationship between religiosity and drinking, and purpose in life and drinking, over time? How do these relationships vary by race?*
**Question IV Hypothesis 1:** Higher purpose in life and religiosity scores will correlate with favorable drinking outcomes. Specifically, higher purpose in life scores will correlate significantly with higher percent days abstinent scores and with lower drinks per drinking day scores. Also, higher religiosity scores will correlate significantly with higher percent days abstinent scores and lower drinks per drinking day scores.

**Question IV Hypothesis 2:** The correlations between purpose in life/religiosity and drinking outcomes will be stronger for blacks than whites.

**Findings for Question IV:** Figures 8-19 depict the association between purpose in life at month 15, or religiosity at month 15, and drinking over time. Figure 8 depicts levels of purpose in life by race by percent days abstinent (drinking frequency) over time; Figure 9 depicts the same information by drinks per drinking day (drinking intensity). Figure 10 depicts levels of religiosity by race by percent days abstinent; Figure 11 depicts the same information by drinks per drinking day. Figure 12 depicts purpose in life change scores by percent days abstinent for the combined sample; Figure 13 depicts the same information by drinks per drinking day. Figure 14 depicts purpose in life change scores by race by percent days abstinent; Figure 15 depicts the same information by drinks per drinking day. Figure 16 depicts religiosity change scores by percent days abstinent for the combined sample; Figure 17 depicts the same information by drinks per drinking day. Figure 18 depicts religiosity change scores by race by percent days abstinent; Figure 19 depicts the same information by drinks per drinking day. Together, these figures represent a visualization of the ways in which drinking data correspond with either purpose in life or religiosity data over time. Each figure will be discussed individually.
Figure 8 depicts blacks and whites with high purpose in life at month 15 have best outcomes in terms of percent days abstinent (drinking frequency) than other groups. Blacks and whites with lowest purpose in life scores have worst drinking outcomes than other groups. A one-way ANOVA indicated a significant difference among the means at month 15: $F(7, 406) = 3.750, p=.001$. A Games-Howell post hoc test indicated whites and blacks with high purpose in life achieved more abstinence than blacks and whites with low purpose in life.

Figure 8. Levels of Purpose in Life at Month 15 by Race by Percent Days Abstinent over Time in Subset of Project MATCH (N=414; n=324 whites; n=90 blacks)

Note. Thirty-one blacks (34%) and 82 whites (25%) had high scores, 24 blacks (27%) and 74 whites (23%) had medium high scores, 16 blacks (18%) and 83 whites (26%) had medium low scores, and 19 blacks (21%) and 85 whites (26%) had low scores.
Figure 9 depicts, in absolute terms, blacks with high purpose in life drink less when they do drink than any other group during the first year after intake, then, whites with highest purpose in life drink less. In absolute terms, those who drink the most when they do drink are blacks with low purpose in life and blacks with medium low purpose in life. However, at month 15 the only statistically significant differences were among whites: a one-way ANOVA indicated a significant difference among the means: $F(7, 406) = 5.500, p < .001$. A Games-Howell post hoc test indicated whites with high purpose in life drank less than whites with low purpose in life, blacks with low purpose in life, and whites with medium low purpose in life. Also, whites with medium high purpose in life drank less than whites with low purpose in life.

Figure 9. Levels of Purpose in Life by Race by Drinks per Drinking Day Over Time in Subset of Project MATCH (N=414)

Thirty-one blacks (34%) and 82 whites (25%) had high scores, 24 blacks (27%) and 74 whites (23%) had medium high scores, 16 blacks (18%) and 83 whites (26%) had medium low scores, and 19 blacks (21%) and 85 whites (26%) had low scores.
Figure 10 depicts that despite an overall decrease in religiosity scores over time for both races, blacks with highest religiosity scores at month 15 have, in absolute terms, the best drinking outcomes of any group. When looking at this chart, it is helpful to recall that the mean percent days abstinent (percentage of days in the previous month spent not drinking) at 15 months for whites is 70.89% and for blacks is 74.51%. It is interesting to note that blacks with high levels of religiosity have percent days abstinent scores in the high 80-90% range. That is, blacks with high religiosity scores achieve drinking outcomes superior in absolute terms to those of whites with high religiosity or any other group depicted on the graph. A one-way ANOVA indicated a significant difference among the means at month 15: $F(7, 406) = 3.369, p=.002$. A Games-Howell post hoc test indicated blacks with high religiosity achieved more abstinence than whites with low and medium low religiosity and blacks with medium low religiosity.
Figure 10. Levels of Religiosity by Race by Percent Days Abstinent Over Time in Subset of Project MATCH (N=414)

Forty-two blacks (47%) and 68 whites (21%) had high scores, 22 blacks (24%) and 88 whites (27%) had medium high scores, 17 blacks (19%) and 73 whites (23%) had medium low scores, and 9 blacks (10%) and 95 whites (29%) had low scores.
Figure 11 depicts blacks with high religiosity drink less when they do drink, but not far less than other groups, such as whites with medium high religiosity or whites with high religiosity. A one-way ANOVA indicated a significant difference among the means at month 15: $F(7, 406) = 2.176, p=0.035$; however, a Tukey HSD post hoc test indicated there were no significant differences among groups.

Figure 11. Levels of Religiosity by Race by Drinks per Drinking Day Over Time in Subset of Project MATCH (N=414)

Forty-two blacks (47%) and 68 whites (21%) had high scores, 22 blacks (24%) and 88 whites (27%) had medium high scores, 17 blacks (19%) and 73 whites (23%) had medium low scores, and 9 blacks (10%) and 95 whites (29%) had low scores.
The next set of figures depicts the ways in which purpose in life and religiosity change scores relate to drinking outcomes over time. Figure 12 depicts those whose purpose in life increased achieved the most abstinence, those whose purpose in life scores did not change achieved moderate abstinence, and those whose purpose in life scores decreased have the poorest results with abstinence. A one-way ANOVA indicated a significant difference among the means at month 15: $F(2, 411) = 11.610, p=.000$. A Games-Howell post hoc test indicated those whose purpose in life increased achieved more abstinence than the other two groups.

Figure 12. Purpose in Life Change Scores by Percent Days Abstinent Over Time in Subset of Project MATCH (N=414)

Purpose in life scores increased for 234 (56.5%) of the sample, remained the same for 104 (25.1%) of the sample, and decreased for 76 (18.4%) of the sample.
Figure 13 depicts those whose purpose in life scores increased (56.5% of the sample) drink less when they do drink, those whose purpose in life scores do not change (25.1%) drink more, and those whose purpose in life scores decreased (18.4%) drink the most. A one-way ANOVA indicated a significant difference among the means at month 15: $F(2, 411) = 10.292, p = .000$. A Games-Howell post hoc test indicated those whose purpose in life decreased drank significantly more than the other two groups.

Figure 13. Purpose in Life Change Scores by Drinks per Drinking Day Over Time in Subset of Project MATCH (N=414)

Purpose in life scores increased for 234 (56.5%) of the sample, remained the same for 104 (25.1%) of the sample, and decreased for 76 (18.4%) of the sample.
Figure 14 depicts these relationships by race. The figure depicts that blacks and whites whose purpose in life score increased have the best success with abstinence. A one-way ANOVA indicated a significant difference among the means at month 15: $F(5, 408) = 4.913, p=.001$. A Games-Howell post hoc test indicated whites whose purpose in life decreased had less abstinence than blacks and whites whose purpose in life increased.

Figure 14. Purpose in Life Change Scores by Race by Percent Days Abstinent in Subset of Project MATCH (N=414)

Purpose in life increased for 47 (52%) of blacks and 187 (58%) of whites, remained the same for 22 (24%) of blacks and 82 (25%) of whites, and decreased for 21 (23%) of blacks and 55 (17%) of whites.
Figure 15 depicts that blacks whose purpose in life scores increased drank less, but so did whites whose purpose in life scores increased and whites with no change in purpose in life. A one-way ANOVA indicated a significant difference among the means at month 15: $F(5, 408) = 4.919$, $p = .000$. A Games-Howell post hoc test indicated whites whose purpose in life decreased drank significantly more than whites whose purpose in life did not change, and whites and blacks whose purpose in life increased.

Purpose in life increased for 47 (52%) of blacks and 187 (58%) of whites, remained the same for 22 (24%) of blacks and 82 (25%) of whites, and decreased for 21 (23%) of blacks and 55 (17%) of whites.
Figure 16 depicts those whose religiosity scores increase or stay the same have better abstinence outcomes than those whose religiosity scores decrease. It is important to note that for 87.2% of the sample, religiosity scores decreased. However, the minority whose religiosity scores increased or stayed the same achieved better drinking outcomes. A one-way ANOVA indicated a significant difference among the means at month 15: $F(2, 411) = 4.020, p = .019$. A Games-Howell post hoc test indicated those whose religiosity decreased achieved less abstinence than the other two groups.

Figure 16. Religiosity Change Scores by Percent Days Abstinent Over Time in Subset of Project MATCH (N=414)

Religiosity scores increased for 25 (6%) of the sample, remained the same for 28 (6.8%) of the sample, and decreased for 361 (87.2%) of the sample.
Figure 17 depicts those whose religiosity decreased (again, the majority) drank as much per day as those whose religiosity increased until the seventh month, then all three groups drank about the same amount for a brief period, then those whose religiosity scores decreased drank the most. However, a one-way ANOVA indicated there were no significant differences among means at month 15.

Figure 17. Religiosity Change Scores by Drinks per Drinking Day in Subset of Project MATCH (N=414)

Religiosity scores increased for 25 (6%) of the sample, remained the same for 28 (6.8%) of the sample, and decreased for 361 (87.2%) of the sample.
Figure 18 depicts blacks whose religiosity increased and blacks whose religiosity did not change had best abstinence outcomes than all other groups. This represents 15% of the blacks in the sample. Interestingly, whites whose religiosity increased and whites whose religiosity stayed the same also had drinking outcomes that clustered together, but with inferior drinking outcomes to those of blacks. Those who fared worse were whites whose religiosity decreased (88% of whites) and blacks whose religiosity decreased (86% of blacks). Therefore, for the minority of the sample whose religiosity increased or stayed the same, better drinking outcomes were evident; blacks in this group fared better than whites. Caution should be taken in understanding these observations due to small samples sizes of groups whose religiosity increases or stays the same. A one-way ANOVA indicated there were no significant differences among means at month 15. This result might be due to the small size of some of the groups.

Figure 18. Religiosity Change Scores by Race by Percent Days Abstinent in Subset of Project MATCH (N=414)

Religiosity increased for 6 (7%) of blacks and 19 (6%) of whites, remained the same for 7 (8%) of blacks and 21 (6%) of whites, and decreased for 77 (86%) of blacks and 284 (88%) of whites.
The most striking information from Figure 19 is that blacks whose religiosity increases (a small group of 6 participants) also start off drinking far more than other groups in terms of quantity per day. The sample size here is very small but might suggest that blacks who fare worst at baseline but for whom religiosity increases over time ultimately achieve superior drinking outcomes than those in other groups. A one-way ANOVA indicated there were no significant differences among means at month 15.

Figure 19. Religiosity Change Scores by Race by Drinks per Drinking Day in Subset of Project MATCH (N=414)

Religiosity increased for 6 (7%) of blacks and 19 (6%) of whites, remained the same for 7 (8%) of blacks and 21 (6%) of whites, and decreased for 77 (86%) of blacks and 284 (88%) of whites.
Table 7 compares correlations for blacks and whites between purpose in life, religiosity, and drinking outcomes. Many striking comparisons are apparent from this table. First, correlations are substantially stronger for blacks than whites. The correlation for 15 month purpose in life and 15 month percent days abstinent is $r = .144, p = .009$ for whites and $r = .449$ and $p = .000$ for blacks. The correlation for 15 month purpose in life and 15 month drinks per drinking day is $r = -.282, p = .000$ for whites and $r = -.331, p = .001$ for blacks. The same stark differences are true with religiosity correlations. The correlation for 15 month religiosity with 15 month purpose in life is $r = .174, p = .002$ for whites and $r = .399, p = .000$ for blacks. The correlation for 15 month religiosity with 15 month drinks per drinking day is $r = -.150, p = .007$ for whites and $r = -.317, p = .002$ for blacks. Also of note from Table 7 are the differences by race for correlations with the dichotomous sobriety variable with purpose in life. At baseline, purpose in life and sobriety correlate at $r = -.050, p = \text{n.s.}$ for whites and $r = .213, p = .044$ for blacks. At 15 months, purpose in life and sobriety correlate at $r = .172, p = .002$ for whites and $r = .423, p = .000$ for blacks. This suggests the association between purpose in life and religiosity and drinking is stronger for blacks than whites, suggesting purpose in life and religiosity are more prominent constructs for blacks in achieving favorable drinking outcomes.
Table 7. Correlations of Religiosity, Purpose in Life, and Drinking Outcome Variables by Race in Subset of Project MATCH (N=414; whites n=324; blacks n=90)

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*Correlations for this dichotomous variable are calculated using Spearman's rho. All other correlations are calculated using Pearson's r.
PIL=Purpose in Life; DDD=Drinks per Drinking Day; PDA=Percent Days Abstinent; Six Months' Sobriety is a dichotomous variable representing those who have achieved six months' continuous sobriety in months 10, 11, 12, 13, 14, and 15 post intake.

*p<.05. **p<.01. ***p<.001.
Findings Question V, Hypotheses 1-2

Question V: Controlling for a set of covariates (education, race, site; baseline measures of purpose in life, religiosity, and drinking behavior; 15 month measures of purpose in life and religiosity), does race moderate the relationship between purpose in life and drinking outcomes? Controlling for the same set of variables, does race moderate the relationship between religiosity and drinking outcomes?

Question V, Hypothesis 1: For every one unit increase in purpose in life, blacks are more likely to achieve sobriety than whites.

Findings Question V, Hypothesis 1: As described above, logistic regressions were performed to test the hypotheses for Research Question V. Each hypothesis was tested using two steps. In the first step, all predictor variables are included; in the second step, the interaction term is added. Logistic regression output offers three analyses of the data: overall model fit, classification table, and summary of the variables in the model (Mertler & Vannatta, 2002).

One index of model fit offered in logistic regression output is the -2 Log Likelihood. A perfect model would reflect a -2 Log Likelihood of 0. The Hosmer and Lemeshow goodness-of-Fit test is also calculated for the overall model. Non significant scores for this test indicate a viable model. Cox & Snell $R^2$ and Nagelkerke $R^2$ represent estimates of the amount of variance of the dependent variable accounted for by the model. It is similar in nature to the $R^2$ statistic generated in multiple regression analyses. Chi-square statistics compare a “constant only” model to the multivariable model employed in the analysis. A significant result of the chi-square statistic indicates that the model constructed for the analysis is significantly better in predicting outcomes than the
constant model alone. The chi-square statistic is generated at each step in the model; therefore, comparisons can be made from one step in the model to another.

Another indicator of model fit is the classification table. This table compares the degree to which the model can accurately predict membership in one or the other groups in the dichotomous outcome variable by comparing it with actual group membership. The result is a percentage representing the percent of participants who were correctly classified.

The model of the variables presents several statistics—$\beta$, $SE\, \beta$, Wald’s $\chi^2$, $df$, $p$, and $e^\beta$. $\beta$ is the unstandardized regression coefficient representing the effect the predictor variable has on the outcome variable. $SE\, \beta$ is the standard error of the regression coefficient. Wald’s $\chi^2$ is a measure of significance for the regression coefficient. It is the comparable statistic for the t test used in multiple regression. Degrees of freedom ($df$) and the level of significance ($p$) are reported for the Wald statistic. The odds ratio ($e^\beta$) represents “the increase … or decrease … in odds of being classified in a category when the predictor variable increases by 1” (Mertler & Vannatta, 2002, p. 320).

First I will describe the models run to test the first hypothesis, which focuses on purpose in life. In the logistic regression, the case processing summary indicates no missing cases. Tests of the models were run including -2 Log Likelihood, the Hosmer and Lemeshow goodness of fit test, and Model Chi-Square. For the first model which included all the predictor variables, the -2 Log Likelihood was 408.68, the Hosmer and Lemeshow goodness of fit test was not significant, and the model chi square test was significant. While in a perfect model, the -2 Log Likelihood score would be zero, the value for this model is moderate. The Hosmer & Lemeshow goodness of fit test is not
significant and the chi square test is significant, indicating a viable model. The Cox & Snell $R^2$ is .165 and the Nagelkerke $R^2$ is .240 suggesting the model accounts for .240 (24%) of the variance in the dependent measure. The classification table indicates the model can correctly predict the occurrence of six month’s continuous sobriety 77.3% of the time.

The second model includes the interaction term. The -2 Log Likelihood for this model is 404.07, slightly lower than the first model. The chi square test is again significant, indicating a viable model. Hosmer and Lemeshow goodness of fit test is not significant for this model, which is the desired result. The classification table indicates the model can correctly predict the achievement of six month’s continuous sobriety 77.1% of the time. This is .2% lower than the previous model. One of the strengths of the current model is it accounts for slightly more of the variance. The Cox & Snell $R^2$ rose to .174 (a .009 increase) and the Nagelkerke $R^2$ rose to .253 (a .013 increase) indicating this second model, which includes the interaction term, accounts for more of the variance than the first model.
### Logistic Regression Results Predicting the Achievement of 6 Months of Continuous Sobriety or Not and Evaluating Race Moderation Hypotheses in Subset of Project MATCH (N=414)

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<th>Model 1: Control Variables Only</th>
<th>Model 2: Testing Race by Purpose in Life Interaction</th>
<th>Model 3: Testing Race by Religiosity Interaction</th>
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| Cox & Snell R²             | .165       | .174 | .166 |
| Nagelkerke R²              | .240       | .253 | .240 |

* 1=black, 0=white.   * 1=site 8, 0=else.   * 1=site 7, 0=else.   * These focal variables were centered in the models using the interaction terms.
Regression coefficients are presented in Table 8. In the first model, Wald statistics indicated that five variables (education, baseline purpose in life, Site 8, 15 month religiosity, and 15 month purpose in life) significantly predict the likelihood of achieving six months of continuous sobriety. Based on the odds ratios, for each one-unit increase in education, while controlling for all other variables in the model, participants were 1.145 times (14.5%) more likely to get sober. Surprisingly, for each one-unit increase in baseline purpose in life, participants were .982 times (2%) less likely to get sober. For each one-unit increase in 15 month religiosity, participants were 1.067 times (6.7%) more likely to get sober. For each one-unit increase in 15 month purpose in life, participants were 1.039 times (3.9%) more likely to get sober. Participants at Site 8 were 3.5 times more likely to get sober than participants in Site 1, the reference group.

In the second model which included the interaction term, seven variables are significant predictors of sobriety: education, baseline purpose in life, black race, Site 8, 15 month religiosity, 15 month purpose in life (centered), and the interaction term for black*15 month purpose in life (centered). In this model, controlling for all other variables, for every one-unit increase in education, participants are 1.147 times (14.7%) more likely to get sober. For every one-unit increase in baseline purpose in life, participants are .981 times (2%) less likely to get sober. For every one-unit increase in 15 month religiosity, participants are 1.065 times (6.5%) more likely to get sober. Participants who had treatment at Site 8 are 3.5 times more likely to get sober than participants at Site 1, the reference group.

The interaction term is significant at $p = .049$ indicating race is a statistically significant moderator for the way in which purpose in life relates to sobriety. The
interpretation for the interaction effect is as follows. In the following quote, variables provided by Jaccard (2001) are replaced in brackets with the variables they represent in this model. Jaccard writes,

For an interactive logistic model with a quantitative/continuous predictor, [centered 15 month purpose in life], a qualitative predictor, [black], and a product term, [black*centered 15 month purpose in life], for the case of dummy coding on [black], the exponent of the logistic coefficient for [black*centered 15 month purpose in life] is the ratio of the multiplicative factor by which the predicted odds change given a 1-unit increase in [centered 15 month purpose in life] for the group scored 1 on the dummy variable [blacks] divided by the corresponding multiplicative factor for the reference group [whites] (p. 33).

Therefore, the odds ratio for the interaction effect, 1.044, indicates that for each 1-unit increase above mean scores in 15 month purpose in life, the odds of blacks getting sober are 4.4% more than they are for whites.

Since the interaction term was significant in this model, the interaction effect was then decomposed as discussed in chapter 3. The basic regression equations used to decompose the interaction effect are as follows:

\[
\text{Sobriety} = \text{Constant} + \beta \text{purpose in life} + \beta \text{black dummy variable} + \\
B (\text{purpose in life})(\text{black dummy variable}) + e
\]

This equation was run ten times: five times for blacks and five times for whites. Each of the five equations were generated for a different level of purpose in life (-2 SD below the mean, -1 SD below the mean, mean score, +1 SD above the mean, +2 SD
above the mean). Table 9 describes the mathematical calculations for all ten equations.

The visual depiction of the interaction effect (Figure 19) demonstrates that the slopes for whites and for blacks on purpose in life are not parallel, confirming the presence of an interaction effect and providing evidence for race as a moderator of the degree to which purpose in life relates to sobriety.

<table>
<thead>
<tr>
<th>Population Represented</th>
<th>Mathematical Equation</th>
<th>Value Plotted in Figure 19</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blacks with low (-2 SD) Purpose in Life</td>
<td>(-2.389) + (0.032)(60.59932) + (-0.92)(1) + (0.043)(60.59932)(1)</td>
<td>1.235949</td>
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<tr>
<td>Blacks with low (-1 SD) Purpose in Life</td>
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<tr>
<td>Blacks with high (+1 SD) Purpose in Life</td>
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<tr>
<td>Blacks with high (+2 SD) Purpose in Life</td>
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<tr>
<td>Whites with low (-2 SD) Purpose in Life</td>
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<td>Whites with low (-1 SD) Purpose in Life</td>
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<td>0.20292672</td>
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<td>Whites with mean Purpose in Life</td>
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<tr>
<td>Whites with high (+1 SD) Purpose in Life</td>
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<td>Whites with high (+2 SD) Purpose in Life</td>
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<td>2.16117216</td>
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(-2.389) is the β value for the constant. (0.032) is the β value for 15 month purpose in life. (101.3961) is the sample’s mean 15 month purpose in life score. (0.92) is the β value for the dummy variable “black.” (1) or (0) indicates race; (1) is black and (0) is white. (0.043) is the β value for the interaction term. N=414.
Because centered 15 month purpose in life is part of the interaction term, the interpretation of its relationship to sobriety is different than that of the other main effects in the model. Jaccard (2001) writes that in this instance, “the coefficient associated with [centered 15 month purpose in life] does not represent a ‘main effect’ but instead represents a conditional effect, i.e., the effect of [centered 15 month purpose in life] when the values on the moderator variable [race] are zero” (p. 31). Therefore, the odd ratio on this variable refers to whites in the sample only: for each one-unit increase above the mean on 15 month purpose in life, respondents who are white are 1.032 times (3.2%) more likely to get sober.
**Question V, Hypothesis 2:** For every one unit increase in religiosity, blacks are more likely to achieve sobriety than whites.

**Findings Question V, Hypothesis 2:** A discussion of the second hypothesis follows, which focuses on religiosity. In the logistic regression, the case processing summary indicated no missing cases. Tests of the models were run including -2 Log Likelihood, the Hosmer & Lemeshow goodness of fit test, and Model Chi-Square. This first model includes the same predictor values as the first model in the previous analysis. To review, for this first model, the -2 Log Likelihood was 408.68, the Hosmer & Lemeshow goodness of fit test was not significant, and the model chi square test was significant. This indicates a viable model. The Cox & Snell R² was .165 and the Nagelkerke R² is .240 suggesting the model accounts for .240 of the variance in the dependent measure. The classification table indicates the model can correctly predict the occurrence of six month’s continuous sobriety 77.3% of the time. Regression results for the first model were discussed in the section above on Hypothesis 1.

The second model includes the interaction term. The -2 Log Likelihood for this model is 408.45, slightly lower than the first model. The Hosmer & Lemeshow goodness of fit test is not significant and the chi square test is significant, indicating a viable model. The classification table indicates the model can correctly predict the achievement of six month’s continuous sobriety 77.1% of the time. This is .2% lower than the previous model. The Cox & Snell R² rose very slightly to .166 (.001 increase) and the Nagelkerke R² remained the same at .240 indicating the second model accounts for the same amount of variance that the first model did.
Regression results for second models indicate five variables (education, baseline purpose in life, Site 8, centered 15 month religiosity, and 15 month purpose in life) significantly predict the likelihood of achieving six months of continuous sobriety. In this model, controlling for all other variables, for every one-unit increase in education, participants are 1.146 times (14.6%) more likely to get sober. For every one-unit increase in baseline purpose in life, participants are .982 times (2%) less likely to get sober. For every one-unit increase in 15 month purpose in life, participants are 1.039 times (3.9%) more likely to get sober. Participants who had treatment at Site 8 are 3.5 times more likely to get sober than participants at Site 1, the reference group.

The second model added the interaction term (black*centered 15 month religiosity). The interaction term was not significant in this model indicating that race does not moderate the ways in which religiosity relates to sobriety. Because centered 15 month religiosity is part of the interaction term, the interpretation of its relationship to sobriety is different than that of the other main effects in the model. The odd ratio on this variable refers to whites in the sample only: for each one-unit increase above the mean on 15 month religiosity, respondents who are white are 1.063 times (6.3%) more likely to get sober.
Chapter 5: Conclusions and Implications

This study furthers understanding of the impact of religiosity and spirituality and race on substance abuse treatment outcomes. In this study, purpose in life is a measure of the degree to which a respondent feels a higher purpose in life and thus an absence of Frankl’s concept of an “existential vacuum” and religiosity is a measure of the degree to which a respondent participates in religious practices and behaviors, such as reading scripture or participating in worship services. Study findings on race and purpose in life support the validity of the ethno-cultural stress-coping model as a way to conceptualize the ways in which spirituality varies across socio-cultural groups. Although there are limitations to this study, its findings have implications for theory, practice, policy, and future research.

Review of Findings

Question I: Do health and socioeconomic disparities exist between blacks and whites in this subset of the Project MATCH sample?

Hypothesis for Question I: Blacks will score lower than whites on measures of socioeconomic status, education, cognitive impairment, sociopathy, lifetime consequences of drinking, and drinking intensity at baseline.

Several findings for this question were anticipated based on earlier literature. Blacks had lower levels of education, lower socioeconomic status, and higher levels of cognitive impairment than whites in this subsample of Project MATCH. In addition, blacks reported more drinks per drinking day than whites at intake; when blacks drank, they drank more. This can be viewed as another obstacle to recovery, as drinking more can have a negative impact on a host of psychosocial and physical outcomes. As noted in
earlier research, whites in the sample fared more poorly than blacks on several measures including sociopathy and higher lifetime consequences of drinking. These findings suggest that health and socioeconomic differences by race are complex and multifaceted.

*Question II: How does drinking change over time for both blacks and whites?*

*Hypotheses for Question II: Drinking intensity and drinking frequency will decrease equally over time for both blacks and whites.*

The majority of participants in this subset Project MATCH, both black and white, experienced favorable drinking outcomes. One year after the completion of treatment, participants on average drank less often and drank less when they did drink. Twenty-seven percent of the sample achieved six months’ continuous sobriety. There were no differences by race on these outcomes. Drinking patterns across time were similar by race with the exception of blacks drinking more per drinking day at baseline.

*Question III: How do levels of purpose in life and religiosity compare between blacks and whites, and how do they change over time?*

*Hypotheses for Question III: Purpose in Life and religiosity will increase equally over time for blacks and whites. Blacks will have higher scores than whites on purpose in life and religiosity across all time periods.*

Levels of purpose in life increased as hypothesized, however, unexpectedly, levels of religiosity declined. While blacks had higher levels of purpose in life and religiosity than whites at baseline and at 15 months, patterns of change were parallel between the two groups; that is, both blacks and whites experienced an increase in purpose in life and decrease in religiosity.
What could explain an increase in purpose in life and a decrease in religiosity, while drinking outcomes were improving over the same period? Perhaps in times of crisis, individuals are highly motivated to seek solutions through traditional religious behaviors and practices, as they seek a way out of their pain. But when the crisis abates, there is a decrease in traditional behaviors such as church attendance and reading of scripture. Increasing purpose in life scores indicate that for the majority of participants, inner spiritual strength increased. As inner spiritual strength grows, individuals may feel less of a need for traditional religious practices. These thoughts offer an interesting avenue for a future qualitative study: what is the lived experience of individuals in recovery in terms of their increasing or decreasing religiosity and purpose in life?

*Question IV: Is there a relationship between religiosity and drinking, and purpose in life and drinking, over time? How do these relationships vary by race?*

*Question IV, Hypothesis 1: Higher purpose in life and religiosity scores will correlate with favorable drinking outcomes. Specifically, higher purpose in life scores will correlate significantly with higher percent days abstinent scores and with lower drinks per drinking day scores. Also, higher religiosity scores will correlate significantly with higher percent days abstinent scores and lower drinks per drinking day scores.*

This question was graphically displayed in Figures 8-19. In these graphs, in absolute terms, those with higher purpose in life and religiosity scores achieved the most favorable drinking outcomes over time. When this analysis is broken down by race, in absolute terms, race was a moderator of the relationships between purpose in life, religiosity, and sobriety. In absolute terms, blacks with high religiosity and purpose in life had better drinking outcomes than other groups.
**Question IV, Hypothesis 2:** The correlations between purpose in life/religiosity and drinking outcomes will be stronger for blacks than whites.

These correlations indicated, as hypothesized, that these associations are stronger for blacks than whites.

**Question V:** Controlling for a set of covariates (education, race, site; baseline measures of purpose in life, religiosity, and drinking behavior; 15 month measures of purpose in life and religiosity), does race moderate the relationship between purpose in life and drinking outcomes? Controlling for the same set of variables, does race moderate the relationship between religiosity and drinking outcomes?

**Question V, Hypothesis 1:** For every one unit increase in purpose in life, blacks are more likely to achieve sobriety than whites.

This hypothesis was tested using binary logistic regression. As mentioned in the previous chapter, there was a significant finding for the interaction effect of race by purpose in life at time 15 ($p = .049$) even when controlling for other variables in the model, such as site, education, baseline purpose in life, baseline religiosity, baseline percent days abstinent, 15 month religiosity, and centered 15 month purpose in life. The significant finding for the interaction is robust given it persisted when so many key variables were controlled for. The odds ratio for the interaction effect is 1.044, indicating that for every one-unit increase in centered 15 month purpose in life, blacks are 4.4% more likely to get sober than whites.
Question V, Hypothesis 2: For every one unit increase in religiosity, blacks are more likely to achieve sobriety than whites.

A binary logistic regression was run, this time to test whether race would moderate the relationship between religiosity and drinking outcomes. In this case, this interaction term was not significant, indicating there is no difference between blacks and whites on the relationship between 15 month religiosity and sobriety outcomes.

An important observation can be made about those whose religiosity scores increased or stayed the same (see Figure 16). The 6% of participants whose religiosity scores increased and the 6.8% who had scores that stayed the same achieved more favorable drinking outcomes than the remaining majority of the sample (87.2%). This finding should be interpreted with caution because of the low sample size, but offers compelling implications for practice and further research.

Findings in Relationship to the Literature

This study replicates previous findings in the literature on spirituality, religiosity and addiction. First, it concurs with previous findings that spirituality increases during the duration of treatment (Borman & Dixon, 1998; Mathew et al., 1996; Piderman et al., 2007; Piedmont, 2004; and Stewart & Koeske, 2005).

Second, this study adds to the literature on studies of ethnic minorities and alcoholism. The current study and the other ethno-cultural studies mentioned in chapter 2 (those by Hazel & Mohatt, 2001; Morjaria & Orford, 2002; Morjaria-Keval, 2006; & Stone et al., 2006) suggest that people of color who return to their cultural spiritual traditions thereby achieve favorable drinking outcomes. It is worth repeating a quote
from chapter 2 that speaks to this idea. In research that demonstrated how Sikhs returned to their cultural spiritual practices and stopped drinking, Morjaria-Keval (2006) wrote:

“…specific minority ethnic communities such as those accessed in this research, may have their own mechanisms for dealing with problems such as excessive drinking…. Exploring … recovery processes across different ethnic groups may be an important way forward towards further deepening our understanding of change and recovery from addiction” (p. 114).

This idea is supported by the current study. More research in this vein is warranted.

Finally, this study adds to the very small research literature on African Americans, spirituality, religiosity, and drinking. This study is the first to offer a comparison of black and white individuals who were also alcoholics. Wright (2003) studied African American women in a qualitative inquiry about recovery and spirituality, but in her study did not compare the group to white women. Krause (2003) surveyed older adults, black and white, from the general population (they were not necessarily alcoholics) and compared their drinking behavior. Other work (Potts, 1991) addresses the conceptual relationships between the ideas of race, spirituality, religiosity, and drinking.

**Implications for Policy**

It is important to see the issues raised by this study in their larger socioeconomic and socio-cultural terms. Racism persists. Health disparities are striking. The gap between the rich and the poor is growing. Cornel West writes about contemporary trends in social life that move us away from things spiritual. He writes we are besieged as a society by an “empty quest for pleasure, property, and power” (2001, p. 10)…. “Most of our children—neglected by overburdened parents and bombarded by the market values of
profit-hungry corporations—are ill-equipped to live lives of spiritual and cultural quality” (p. 12). These are broad and pervasive topics beyond the scope of this dissertation. However, the importance of fighting racism and discrimination and working for social and economic justice through every venue available to us as social workers and social scientists—policy, practice, research, and theory—cannot be understated.

This research has implications for policy related to health and socioeconomic disparities and alcohol use. This study brings to light disparities between blacks and whites ranging from excessive alcohol outlets and billboard advertising in minority communities, to the higher likelihood of more serious involvement in the criminal justice system for blacks and its relationship to drinking, to the lower likelihood of uninsured blacks getting alcoholism treatment when they need it. While there are many studies focusing on racially–based health disparities, more research on alcoholism and health disparities would make a strong contribution to the literature. In addition, policies that govern the provision of alcoholism treatment can be tailored to the needs of African Americans as a cultural group to ensure the best possible outcomes for this population.

Implications for Practice

This study found that for blacks and whites, increases in 15 month religiosity and 15 month purpose in life are related to the probability of getting sober. This finding suggests it might be in a patient’s best interest to encourage him or her to access spiritual or religious resources that have been helpful in the past. There may be ways at intake to encourage patients to harness these religious or spiritual practices. Matthews et al. (1998) review the literature on religious commitment and its favorable impact on a wide range of health concerns. The researchers make an important recommendation to the clinical
community that holds for this study as well. It is worthwhile to repeat their recommendations here. They write,

“First, family physicians might integrate two questions into their initial interview. Clinicians might ask, “Is your religion (or faith) helpful to you in handling your illness?” If the answer is yes, they might follow up with this question, “What can I do to support your faith or religious commitment?” Were physicians to ask these questions (and appropriate follow-up questions) more routinely in medical care, they would gain access to potentially valuable information on how to integrate religious factors into the care plans of particular patients—particularly those patients suffering from chronic or severe medical conditions.

“Second, family physicians can encourage patients to make use of potentially health-promoting religious resources from patients’ own religious traditions. Where appropriate, religious patients might be encouraged to pray more—whether individually or with others. If already attending a church, synagogue, or mosque, they might be encouraged to continue. They might be encouraged to meditate. They might be encouraged to attend worship, engage in religiously based mourning rituals, seek and ask forgiveness from significant others, or read holy writ. In short, it would seem that many religious practices that patients find potentially meaningful and congruent with their own value systems might become resources for enhanced prevention, coping, and recovery.
“Finally, family physicians can refer patients to clergy or chaplains as an adjunct to standard medical care. The involvement of clergy might be an especially important source of support for patients who, by virtue of their disability or suffering, need extra community support. The adoption by family physicians of any of the practices suggested is likely to lead to enhanced quality of care and patient satisfaction.” (p. 123).

This study suggests that the advice offered by Matthews et al. is especially important for African American clients, especially as it relates to purpose in life.

Increases in religiosity are related to improved odds of getting sober; therefore, another suggestion from the research literature is relevant here, this one suggesting the involvement of clergy in alcoholism treatment. Treatment facilities can reach out to religious communities to inform local ministries about services they offer. A consortium of religious clergy and alcoholism treatment providers could determine mutually beneficial programs and collaborations.

Mindfulness meditation has a close relationship to ideas of purpose in life and religiosity. Practitioners are encouraged to fully explore the favorable outcomes offered by mindfulness meditation interventions. These interventions integrate cognitive behavioral techniques with meditation exercises and have had great success on health outcomes (Carmody et al., in press) and substance abuse treatment outcomes (Arnold et al., 2002; Avants et al., 2005; Avants, Marcotte, Arnold & Margolin, 2003; Avants et al., 2001; Margolin et al., 2005). Practitioners and treatment facilities are encouraged to fully explore this genre of intervention. An excellent place to start is with S. Kelly Avants and
Arthur Margolin’s work developed at the Yale University School of Medicine. Their Spiritual Self-Schema (3-S) program for the treatment of addiction and HIV risk behavior has been proven effective with a challenging population—individuals in methadone maintenance programs who are HIV positive and drug abusing. However, 3-S principals are helpful to anyone, including treatment professionals and researchers. Their training videos are a rich resource for practitioners and can be streamed online free of charge at http://3-s.us/3-S_StreamingVideo.html.

The current study found that increases in purpose in life are related to favorable treatment outcomes for all participants, but more so for blacks. Therefore, it seems important for treatment services to help people improve their purpose in life. Perhaps a new treatment goal can be added for alcoholics focusing on improving purpose in life. Measurable objectives can be articulated to help patients achieve this treatment goal. Purpose in life relates to finding a higher life’s purpose, a greater sense of meaning beyond one’s self. Purpose in life as a treatment goal has the additional advantage of being phrased in neutral, non-religious language. Few like to have religious ideas thrust upon them. However, patients may be open to cultivating a relationship with greater life purposes and causes. Encouraging love and nurturing for any child or work for a greater good of any kind may help patients shift focus away from self-seeking and toward these greater purposes. Paradoxically, by shifting the focus off him or herself, the alcoholic will more likely attain an achievement of great self love—sobriety.

Suggestions for Research

In this study, the graphs depicting changes in drinking revealed a sharp improvement after the first month of treatment. Looking at these graphs, it is possible to
identify two “curves”—the first, the sudden line of improvement, and the second, the pattern of drinking after the first month over the next 14 months. Since baseline scores represent pre-treatment drinking, the sudden improvement after one month brings up the question of which point in time to consider as a control for outcomes several months later. Should baseline still be considered the measure of early drinking, or would it be more meaningful to use post-treatment levels of drinking as the baseline for more distal outcomes? Future research can be designed to consider this question.

In many of the studies reviewed, spirituality is disconnected from culture. Culture is art, language, food, rituals, song, dance, family; it is also religion and spirituality. While there is an important emphasis on cultural competence in social work and allied health professions (Krentzman & Townsend, in press), and a growing literature on spirituality and health, the connection between spirituality and culture in many studies has been severed. It is as if each individual were a jigsaw puzzle of 1,000 pieces, of which one piece is spirituality. It is as if a researcher can pop out this piece, study and measure it, and replace it in the puzzle without acknowledgement of its cultural context. Notable exceptions are the ethno-cultural studies cited in this dissertation (Hazel & Mohatt, 2001; Morjaria & Orford, 2002; Morjaria-Keval, 2006; & Stone et al., 2006). Future research on spirituality and religiosity could be rooted more firmly in cultural soil. This orientation may change the nature of a given study’s research design, methodology, and outcomes, which may provide valuable new information.

While a number of studies note blacks report higher levels of spirituality and religiosity than whites (Heisel & Faulkner, 1982; Levin et al., 1994; Taylor et al., 1996), this is often reported as an aside and is seldom the primary focus of the study. One study
found that African American women valued aspects of spirituality more than African American men (Arnold et al., 2002). These researchers urged others to “be sensitive to possible gender, sex and cultural differences in how spirituality is perceived” (p. 324). Indeed, greater attention to socio-cultural aspects of spirituality is warranted in future research.

In many studies, demographic descriptions of ethnicity and race are inadequate or missing altogether. Often, the percentage of white participants is reported with no details provided about the non-white participants in the sample; for example, a study may report that 93% of the participants are white, but make no mention about the race of the remaining 7%. It is important that future studies report race and ethnicity with more precision and attention. In addition, it is still true that most studies are conducted with primarily white participants.

This study focused on the dimensions of religiosity/spirituality operationalized by the Project MATCH Research Group, but a question remains: which aspects of spirituality/religiosity are different by race, and which are key in alcoholism recovery? This point is raised by Krause (2003) who notes, “it is hard to tell which dimension (or dimensions) of religion may be associated with abstinence from alcohol” (p. 510). The Fetzer Working Group (Idler et al., 2003) articulated 10 domains of spirituality/religiosity. Which of these domains is operational in predicting drinking behavior or buffering its ill effects? Which are different based on race and ethnicity? These questions call for further investigation.

This study made use of the longitudinal data provided in Project MATCH’s Public Use Data Set in its graphs and in the formation of its dichotomous outcome
variable. However, these same research questions could be rendered using more sophisticated statistical models, such as structural equation modeling, to articulate a path analysis, or latent variable growth curve modeling and regressive cross lag analysis, to study in more detail the ways in which spirituality and drinking interrelate on each subsequent measurement occasion.

This is the first study to find evidence that race moderates the relationship between purpose in life and drinking outcomes. This idea warrants further qualitative and quantitative analyses. In addition, this relationship can be tested with other ethnic minorities such as Native Americans and Hispanics to see if the results can be replicated with other groups. In addition, other strengths in communities of color, such as social support and social networks, should be studied in their relationship to favorable drinking outcomes.

**Study Limitations**

This study used secondary data. Often when data are analyzed for a purpose other than that for which they were originally collected, variables of interest in the secondary study are sometimes inadequately measured in the primary research. Generally there is a lack of richness associated with standard racial categories: black, white, Hispanic, Asian, and other. Of these general categories, Tonigan (2003) writes, “As such, important within-group ethnic variation may have been masked in these analyses. Finer-grained self-report ethnic labels and/or continuous measures of acculturation may provide different and useful perspectives to judge the presence of ethnic health disparities” (p. 1341). Of the standard racial categories typically found in research, an NIAAA publication states, “It is important to note that these categories include hundreds of
distinct ethnic or racial populations which differ markedly in cultural characteristics and drinking behavior. Consequently, research does not support broad generalizations about specific subpopulations, many of which have not been studied individually” (2003, April). It is recommended future studies categorize ethnicity and race with more attention to the variations contained within the standard broad categories.

Another limitation is the lack of specificity associated with the respondent’s religion. It is important in studies of religiosity, spirituality, and drinking that denominational preference is measured and given consideration (Krause, 2003). Many fundamentalist and evangelical churches forbid or discourage the use of alcohol as official church doctrine. This important factor must be considered and controlled for. Not surprisingly, Krause (2003) found that affiliation with fundamentalist churches is associated with abstaining from alcohol in a sample of older adults. Subsequent studies which focus on race, culture, and spirituality would do well to measure religious denomination with more specificity.

The primary limitation of this study is the absence of a variable measuring Alcoholics Anonymous participation. Many studies of spirituality and drinking include AA participation as an important covariate (for example, see Robinson, Cranford, Webb, and Brower, 2007 and Zemore, 2007). Indeed, it is a critical variable. AA has a spiritual component and plays a major role in helping alcoholics to stop drinking and stay stopped. Galanter (2007) goes further to describe AA itself as a “spiritual recovery movement” (p. 265). AA participation is a key variable in pathways that include spirituality and religiosity as they predict drinking outcomes. Zemore’s study, for example, finds that religiosity mediates the ways in which 12- step participation impacts drinking outcomes.
Robinson et al. found that purpose in life predicts favorable drinking outcomes even when AA participation is controlled for. Much has been written about the ways in which AA participation helped Project MATCH participants achieve favorable drinking outcomes (Owen et al., 2003; Tonigan, Connors, & Miller, 1998; Tonigan, Miller, & Schermer, 2002). However, the Public Use Data Set offered only baseline AA participation. AA participation over time was necessary to include the variable more meaningfully. (Baseline AA was eliminated from the statistical models in this study for reasons stated, such as missing data and no difference on this measure by race or by outcome). Future research exploring race as a moderator should analyze AA participation over time and the ways in which it affects and is affected by changes in drinking, purpose in life, and religiosity.

There are limitations in this study in terms of generalizability. First, only three of Project MATCH’s sites were included in this analysis to represent a more proportional relationship of black and white respondents. However, as such, the subset used in this study is no longer representative of the original Project MATCH sample. Further, as mentioned, cases with missing data on key variables were eliminated and these cases represented individuals who drank more than the retained group of cases. Therefore, the subset used in this study can be generalized to all alcoholics only with caution. Finally, as mentioned, research has suggested that Project MATCH’s inclusion and exclusion criteria disproportionately eliminates black participants. All of these considerations affect generalizability and external validity.

Another study limitation concerns reliability. Cronbach’s alphas for the purpose in life and religiosity instruments could not be calculated for this subset of Project
MATCH. This was because the Public Use Data Set did not provide item-level data. Therefore, it was not possible to report on the reliability of these measures for this sample.

**Study Strengths**

The strengths of this study are mostly inherited from its parent, Project MATCH. As mentioned in chapter 3, Project MATCH offered the benefits of a large number of cases, longitudinal data, meticulous follow up and data collection procedures, and a rich list of variables that served an important role in this study as covariates.

A second strength is this study’s use of data visualization techniques. Long used in other fields such as computer science and genomics (K. Li, personal communication, October 19, 2007), this technique helps a dataset to tell its story in a more intuitive and accessible manner before more abstract statistical procedures are employed.

**Conclusion**

This research was inspired by a report authored by Lowman and Le Fauve (2003) which stated that despite health and socioeconomic disparities at intake, blacks achieved equivalent drinking outcomes to whites. This was true in four large alcoholism treatment trials funded by NIAAA. Researchers were baffled by these findings. McCay et al. (2003) hypothesized that blacks may recover via different pathways than whites. They recommended future studies explore “possible differences in process, or meditational, effects … as they could provide insight into ways to improve treatment for blacks” (p. 1323). This study explored whether race moderates the relationship between purpose in life and religiosity and alcoholism treatment outcomes. It found evidence that race moderates both purpose in life and religiosity. When important covariates were controlled
using binary logistic regression, evidence remained for the finding of race as a moderator for the relationship between purpose in life and alcoholism treatment outcomes.
Appendices

Appendix A

DSM-III-R Diagnostic criteria for Psychoactive Substance Dependence

A. At least three of the following:
   (1) substance often taken in larger amounts over a longer period than the person intended
   (2) persistent desire or one or more unsuccessful efforts to cut sown or control substance use
   (3) a great deal of time spent in activities necessary to get the substance (e.g., theft), taking the substance (e.g., chain smoking), or recovering from its effects
   (4) frequent intoxication or withdrawal symptoms when expected to fulfill major role obligations at work, school, or home (e.g., does not go to work because hung over, goes to school or work “high,” intoxicated while taking care of his or her children), or when substance use is physically hazardous (e.g., drives when intoxicated)
   (5) important social, occupational, or recreational activities given up or reduced because of substance use
   (6) continued substance use despite knowledge of having a persistent or recurrent social, psychological, or physical problem that is caused or exacerbated by the use of the substance (e.g., keeps using heroin despite family arguments about it, cocaine-induced depression, or having an ulcer made worse by drinking)
   (7) marked tolerance: need for markedly increased amounts of the substance (i.e., at least a 50% increase) in order to achieve intoxication or desired effect, or markedly diminished effect with continued use of the same amount
      Note: the following items may not apply to cannabis, hallucinogens, or phencyclidine (PCP):
   (8) characteristic withdrawal symptoms (see specific withdrawal syndromes under Psychoactive Substance-induced Organic Mental Disorders)
   (9) substance often taken to relieve or avoid withdrawal symptoms

B. Some symptoms of the disturbance have persisted for at least one month, or have occurred repeatedly over a longer period of time.

Appendix A, Continued

Diagnostic criteria for Psychoactive Substance Abuse

A. A maladaptive pattern of psychoactive substance use indicated by at least one of the following:
   (1) continued use despite knowledge of having a persistent or recurrent social, occupational, psychological, or physical problem that is caused or exacerbated by use of the psychoactive substance
   (2) recurrent use in situations in which use is physically hazardous (e.g., driving while intoxicated)

B. Some symptoms of the disturbance have persisted for at least one month, or have occurred repeatedly over a longer period of time.

C. Never met the criteria for Psychoactive Substance Dependence for this substance

Appendix B

The author acknowledges that the reported results are, in whole or in part, based on analyses of the Project MATCH Public Data Set. These data were collected as part of a multisite clinical trial of alcoholism treatments supported by a series of grants from the National Institute on Alcohol Abuse and Alcoholism and made available to the authors by the Project MATCH Research Group. This dissertation has not been reviewed or endorsed by the Project MATCH Research Group and does not necessarily represent the opinions of its members, who are not responsible for the contents.
Appendix C

Purpose in Life Scale

For each of the following statements, circle the number that would be most nearly true for you:

1. I am usually:

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>completely bored</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Exuberant, enthusiastic</td>
</tr>
</tbody>
</table>

2. Life to me seems:

<table>
<thead>
<tr>
<th></th>
<th>7</th>
<th>6</th>
<th>5</th>
<th>4</th>
<th>3</th>
<th>2</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>always exciting</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>completely routine</td>
</tr>
</tbody>
</table>

3. In life I have:

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>no goals or aims at all</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Very clear goals and aims</td>
</tr>
</tbody>
</table>

4. My personal existence is:

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Utterly meaningless, without purpose</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Very purposeful and meaningful</td>
</tr>
</tbody>
</table>

5. Every day is:

<table>
<thead>
<tr>
<th></th>
<th>7</th>
<th>6</th>
<th>5</th>
<th>4</th>
<th>3</th>
<th>2</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Constantly new and different</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Exactly the same</td>
</tr>
</tbody>
</table>

6. If I could choose, I would:

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Prefer never to have been born</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Like nine more lives just like this one</td>
</tr>
</tbody>
</table>
7. After retiring, I would:

<table>
<thead>
<tr>
<th></th>
<th>7</th>
<th>6</th>
<th>5</th>
<th>4</th>
<th>3</th>
<th>2</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Do some of the exciting things I have always wanted to do</td>
<td>(neutral)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Loaf completely the rest of my life</td>
</tr>
</tbody>
</table>

8. In achieving life goals I have:

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Made no progress whatever</td>
<td>(neutral)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Progressed to complete fulfillment</td>
</tr>
</tbody>
</table>

9. My life is:

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Empty, filled only with despair</td>
<td>(neutral)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Running over with exciting good things</td>
</tr>
</tbody>
</table>

10. If I should die today, I would feel that my life has been:

<table>
<thead>
<tr>
<th></th>
<th>7</th>
<th>6</th>
<th>5</th>
<th>4</th>
<th>3</th>
<th>2</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Very worthwhile</td>
<td>(neutral)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Completely worthless</td>
</tr>
</tbody>
</table>

11. In thinking of my life, I:

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Often wonder why I exist</td>
<td>(neutral)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Always see a reason for my being here</td>
</tr>
</tbody>
</table>

12. As I view the world in relation to my life, the world:

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Completely confuses me</td>
<td>(neutral)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Fits meaningfully with my life</td>
</tr>
</tbody>
</table>

13. I am a:

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Very irresponsible person</td>
<td>(neutral)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Very responsible person</td>
</tr>
</tbody>
</table>
14. Concerning man’s freedom to make his own choices, I believe man is:

<table>
<thead>
<tr>
<th>7</th>
<th>6</th>
<th>5</th>
<th>4</th>
<th>3</th>
<th>2</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Absolutely free to make all life choices</td>
<td>(neutral)</td>
<td>Completely bound by limitations of heredity and environment</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

15. With regard to death, I am:

<table>
<thead>
<tr>
<th>7</th>
<th>6</th>
<th>5</th>
<th>4</th>
<th>3</th>
<th>2</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prepared and unafraid</td>
<td>(neutral)</td>
<td>Unprepared and frightened</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

16. With regard to suicide, I have:

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thought of it seriously as a way out</td>
<td>(neutral)</td>
<td>Never given it a second thought</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

17. I regard my ability to find meaning, purpose, or mission in life as:

<table>
<thead>
<tr>
<th>7</th>
<th>6</th>
<th>5</th>
<th>4</th>
<th>3</th>
<th>2</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very great</td>
<td>(neutral)</td>
<td>Practically none</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

18. My life is:

<table>
<thead>
<tr>
<th>7</th>
<th>6</th>
<th>5</th>
<th>4</th>
<th>3</th>
<th>2</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>In my hands and I am in control of it</td>
<td>(neutral)</td>
<td>Out of my hands and controlled by external factors</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

19. Facing my daily tasks is:

<table>
<thead>
<tr>
<th>7</th>
<th>6</th>
<th>5</th>
<th>4</th>
<th>3</th>
<th>2</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>A source of pleasure and satisfaction</td>
<td>(neutral)</td>
<td>A painful and boring experience</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

20. I have discovered:

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>No mission or purpose in life</td>
<td>(neutral)</td>
<td>Clear-cut goals and a satisfying life purpose</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Appendix D

The Religious Background and Behaviors Questionnaire Items

Appendix

The Religious Background and Behaviors Questionnaire Items

1. Which of the following best describes you at the present time? (Check one)
   - **Atheist**  • I do not believe in God.
   - **Agnostic**  • I believe we can’t really know about God.
   - **Unsure**  • I don’t know what to believe about God.
   - **Spiritual**  • I believe in God, but I’m not religious.
   - **Religious**  • I believe in God and practice religion.

2. For the past year, how often have you done the following? (Circle one number for each line.)

<table>
<thead>
<tr>
<th>Activity</th>
<th>Never</th>
<th>Rarely</th>
<th>Once a month</th>
<th>Twice a month</th>
<th>Once a week</th>
<th>Twice a week</th>
<th>Almost daily</th>
<th>More than once a day</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Thought about God</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>1</td>
</tr>
<tr>
<td>b. Prayed</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>1</td>
</tr>
<tr>
<td>c. Meditated</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>1</td>
</tr>
<tr>
<td>d. Attended worship service</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>1</td>
</tr>
<tr>
<td>e. Read-studied scriptures, holy writings</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>1</td>
</tr>
<tr>
<td>f. Had direct experiences of God</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>1</td>
</tr>
</tbody>
</table>

3. Have you ever in your life:

<table>
<thead>
<tr>
<th>Activity</th>
<th>Never</th>
<th>Yes, is the past but not now</th>
<th>Yes, and I still do</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Believed in God?</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>b. Prayed?</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>c. Meditated?</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>d. Attended worship services regularly?</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>e. Read scriptures or holy writings regularly?</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>f. Had direct experiences of God?</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>
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