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Religious Coping, Spirituality, and Substance Use and Abuse Among Youth in High-Risk Communities in San Salvador, El Salvador

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Abstract

Little is known about the relationship between religious coping, spirituality, and substance use in developing nations such as El Salvador. Collected in 2011, the sample consists of 290 high-risk and gang-involved adolescents (11–17 years) and young adults (18–25 years) in San Salvador, El Salvador. Structural equation modeling and logistic regression are employed to examine the associations between the Measure of Religious Coping (RCOPE), the Intrinsic Spirituality Scale, and substance use and abuse. Results suggest that spirituality and, to a far lesser degree, religious coping may serve to protect for substance use and abuse among this high-risk population of Salvadoran youth.

Keywords

substance abuse; El Salvador; gangs; religious coping; spirituality

Empirical research conducted in United States and in other developed nations consistently has identified religiosity and spirituality as protective factors for youth involvement in substance use and abuse (Koenig, King, & Carson, 2012). Adolescents and young adults who are involved in religious communities and who express interest in spiritual and religious engagement are less likely to use substances, such as tobacco, alcohol, marijuana, and other drugs (Salas-Wright, Vaughn, Hodge, & Perron, 2012), and are less likely to abuse illicit substances and develop chemical dependency (Koenig et al., 2012). Religious coping, defined as the utilization of religion as a strategy for managing stressful life events and conceptualized as sharing substantial overlap with the broader construct of religiosity (Pargament, Koenig, & Perez, 2000), has been identified as a protective factor for adolescent substance use as well (Brechting & Giancola, 2007). Notably, the strength of these

relationships has been found to be particularly robust in sociocultural contexts in which the cultural importance of religious practice is paramount (Regnerus, 2003a) as is the case in El Salvador and throughout much of Latin America (IUDOP, 2009).

Although this body of literature is quite well established in the North American context, relatively little is known in terms of the relationship between religious coping, spirituality, and substance use and abuse among young people in El Salvador and, more broadly, in Central America. This gap in the literature is noteworthy given that research has identified religiosity and spirituality as important constructs in the lives of many Salvadorans (IUDOP, 2009). Indeed, a recent study by Santacruz Giralt and Carranza (2009) found that 3 out of 4 (77.6%) Salvadorans between the ages of 15 and 24 years reported that religion was a very important aspect of their lives. Santacruz Giralt and Carranza also found that Salvadoran youth reported higher levels of participation in religious youth groups than in all other social groups except athletic teams. Importantly, findings from recent qualitative investigations also suggest that religiosity and spirituality are salient concepts in the lives of important segments of high-risk and gang-involved youth in El Salvador and across Central America (Brenneman, 2012). Drawing from the theoretical framework of the social development model (SDM) (Catalano & Hawkins, 1996), the aim of this study is to address this research gap by examining the direct and mediated relationships between religious coping, spirituality, social developmental factors, and substance use and abuse among high-risk and gang-involved youth in El Salvador. Two principal questions serve to guide this study: first, are spirituality and religious coping associated with lower levels of substance use and abuse among this sample of Salvadoran youth? And second, do social developmental factors—such as antisocial bonding and beliefs—mediate these important relationships?

Socioeconomic and Historical Context of El Salvador, Central America

Demographic, Socioeconomic, and Religious Context of El Salvador

El Salvador, which has approximately the same territorial landmass (21,000 square kilometers) and population (6.1 million inhabitants) as the Commonwealth of Massachusetts, is the smallest and most densely populated nation in Central America (Central Intelligence Agency [CIA], 2013). It is located along the Pacific Coast of the Central American isthmus, borders Guatemala and Honduras to the north, and its capital city and major population center is San Salvador (1.5 million inhabitants) (United Nations, 2009). Behind only Costa Rica and Panama, the Salvadoran economy is the third largest in Central America and is primarily oriented around the production of low-cost products such as coffee, textiles, and sugar (CIA, 2013).

Despite its relative economic standing among Central American economies, El Salvador faces a number of challenges in terms of socioeconomic development. Indeed, poverty is a major issue in the lives of many Salvadorans as nearly half of the population (48%) falls below the nation's poverty threshold and nearly 1 in 5 Salvadorans survive on less than 2 dollars per day (Economic Commission for Latin America and the Caribbean [ECLAC], 2010; World Bank, 2009). Unemployment has also been found to be an important issue in El Salvador as a recent study found that only 2 in 5 (42%) Salvadoran adults reported current employment in either the formal or informal sectors (IUDOP, 2012). Access to education

has also proven to be a challenge to development as the mean education level for Salvadoran adults is just above the seventh grade (United Nations Development Program [UNDP], 2010). Disparities in access to education have been found to be far greater in the nation's rural areas and in socioeconomically marginalized communities (Santacruz Giralt & Carranza, 2009). In the face of these dire circumstances, many Salvadorans are lacking in the belief that substantive change will take place in the near future. Recent nationally representative studies have found that 3 in 5 Salvadorans (59%) believe that poverty in the country has gotten worse in recent years and 3 in 4 (77%) believe that the local economy will either stay the same or get worse in the near future (IUDOP, 2012). Simply, El Salvador faces many real socioeconomic challenges, and many everyday Salvadorans consider that their nation's situation has gotten worse and is likely to stay the same or continue to decline.

In terms of religious diversity, similar to developments observed over the last few decades across Latin America, El Salvador has seen a great deal of change in recent years (Steigenga & Cleary, 2008). Although El Salvador was a predominantly Roman Catholic nation during most of the 20th century, recent years have seen a decrease in the proportion of the nation that identifies as Roman Catholic and an increase in the presence of evangelical Christians from various denominations. Indeed, while it was estimated in 1980 that 91% of Salvadorans were Roman Catholics (Holland, 1981), by the mid-1990s the proportion of Salvadorans identifying as Roman Catholic had dropped substantially to only 75% (Murray & Barry, 1995). Currently, it is estimated that fewer than half of all Salvadorans (46%) identify as Roman Catholic, one third (33%) identify as evangelical Christian, one sixth (17%) practice no religion or are nonbelievers, and a small minority identify with other Christian traditions (4%) (IUDOP, 2012). Simply, El Salvador has seen dramatic changes in religious diversity over the last few decades as the country has shifted from being predominantly Roman Catholic to being, by and large, a nation with substantial intra-Christian diversity.

Violence and Gangs in El Salvador

The development and well-being of Salvadoran youth is undoubtedly shaped by the nation's long history of violence and social conflict. During the 20th century, El Salvador experienced a variety of social uprisings and violent governmental responses during the 1930s (Cardenal, 2000), numerous large-scale massacres during the 1960s–1980s (Danner, 1994), and more than a decade of civil war between 1980 and 1992 that claimed the lives of more than 75,000 Salvadorans (United Nations, 1993). In the post-war era, El Salvador has become well-known as a hotbed of youth gang activity as well as widespread crime and violence (Decker & Pyrooz, 2010; Olate & Salas- Wright, 2010). Indeed, over the last decade, El Salvador has consistently been identified as one of the most violent countries in the world as the nation's current homicide rate of 69 homicides per 100,000 inhabitants is nearly 10 times greater than the rate worldwide and roughly 300% that of Latin America in general (United Nations Office on Drugs and Crime [UNODC], 2012).

Street gangs have become an increasingly important phenomenon that has important implications for the lives of Salvadoran youth (Cruz, 2010; Savenije, 2009). Indeed, El Salvador's two primary street gangs—La Mara Salvatrucha (MS-13) and El Barrio 18 ("the

18th Street Gang")—are estimated to have roughly 20,000 active members in El Salvador, and it has been estimated that between 54,000 and 85,000 gang members reside in Central America's "Northern Triangle" nations of El Salvador, Honduras, and Guatemala (UNODC, 2012). In El Salvador, although it is difficult to arrive at precise estimates, it has been suggested that youth gangs may account for as much as 25% of the nation's homicides and violent crime (Cruz, 2005). The link between gang membership and antisocial behavior has been substantiated by recent studies that have found youth gang members in El Salvador to be substantially more likely than their nongang peers to be involved in serious violence and crime (Olate, Salas- Wright, & Vaughn, 2011, 2012; Salas-Wright, Olate, & Vaughn, 2013). In all, the sociohistorical reality of violence and, more recently, youth gangs in El Salvador provides an important context for the conceptualization of youth substance use and abuse as well as the examination of key risk and protective correlates.

Youth Substance Use in El Salvador

Systematic empirical research on adolescent and young adult substance use and abuse in El Salvador is relatively limited and, arguably, somewhat contested. Findings from a cross-national study conducted by Dormitzer and colleagues (2004) among school-enrolled adolescents across Latin America suggest that rates of adolescent alcohol use (34%) in El Salvador are relatively low compared with other Latin and Central American nations, but that rates of tobacco (30%) and illicit drug use (8%) in El Salvador are at or above mean levels for nations across the Americas. School-based epidemiological studies of high school students in El Salvador suggest that Salvadoran adolescents in general are substantially less likely to report heavy episodic drinking (10%), cigarette use (34%), and the use of marijuana (5%), cocaine (3%), and inhalants (4%) compared with Hispanic adolescents in the United States (Springer, Kelder, Orpinas, & Baumler, 2007). However, given that the mean education level of Salvadoran youth is 7.5 years (UNDP, 2010) and that important substance use differences can be observed between school-enrolled and dropout youth (Townsend, Flisher, & King, 2007), it is likely that rates of substance use among Salvadoran youth in general may be substantially higher than those reported in the aforementioned studies. Indeed, drawing from a sample of marginalized adolescents and young adults in the San Salvador Metropolitan area Olate and colleagues (2011) found that 64% of youth reported recent alcohol use and 46% reported recent marijuana use. Among youth gang members in the sample, the percentages of alcohol and marijuana use were significantly higher with 81% of gang-involved respondents reporting alcohol use and 77% of gang-involved respondents reporting marijuana use. Simply, while school-based studies suggest relatively low population-level base rates, studies using community samples and those examining high-risk Salvadoran youth suggest that substance use may be much more problematic, particularly among high-risk groups.

Religious Coping, Spirituality, and Substance Use/Abuse

As noted above, a consistent protective pattern can be observed in the literature in the United States on the relationship between religiosity, spirituality, and substance use and abuse. By and large, young people that frequently attend religious services and those that ascribe a high value to religious and spiritual beliefs tend to be less likely to take part in and

abuse a variety of illicit substances (Salas- Wright et al., 2012). Although religiosity and spirituality are relatively far-reaching concepts, the most commonly examined religiosity and spirituality variables in relation to substance use and abuse are religious service attendance and religious saliency. However, a number of studies have also specifically examined the protective impact of religious coping (Brechting & Giancola, 2007; Eisenberg et al., 2011), which is typically conceptualized as sharing substantial conceptual overlap with religiosity (Pargament et al., 2000). For instance, Brechting and Giancola (2007), in a study of adolescent boys in the United States, found that religious coping during early adolescence (age 12–14 years) predicted lower rates of drug use and abuse during mid- to late-adolescence (age 15–16 years). Eisenberg and colleagues (2011), in a study examining the relationship between religious coping and delinquency/prosocial behavior among Italian youth in the transition from adolescence to young adulthood, found somewhat similar results. In this study, youth found to consistently report high levels of religious coping were found to exhibit more prosocial behavior and fewer externalizing behaviors than youth with less consistently elevated levels of religious coping. Although relatively few studies have examined the protective effect of religious coping on substance use and related risk behaviors, conceptual evidence suggests that religious coping may have the capacity to protect young people from involvement in substance use inasmuch as it is associated with important self-regulatory, psychological, and social mediating factors associated with substance use (Ano & Vasconcelles, 2005). Moreover, given that religious coping has been found to share substantial conceptual overlap with religiosity (Eisenberg et al., 2011), it is reasonable to surmise that young people who use religious practices or imagery as a means of coping with stressful life events may be less likely to use and abuse illicit substances.

The Social Development Model

The theoretical framework for this study draws upon the SDM (Catalano & Hawkins, 1996). The SDM is one of the most well-established developmental-ecological theories in the field of youth problem behavior. The SDM draws from social learning theory, social control theory, and differential association theory in explaining the development of pro- and antisocial behaviors, including violence, delinquency, and substance use. The SDM suggests that an individual learns behaviors, be they prosocial or antisocial, through a process of socializing and bonding with key socializing units, such as family, school, peers, and other community groups. According to the SDM, when youth perceive opportunities to take part in social activities or interactions, be they prosocial or antisocial, and have sufficient skills to participate successfully over time, a process of social bonding ensues. Once such bonds are established, the bonds themselves have the capacity to subsequently influence beliefs and behaviors as youth seek to conform to the basic pro- or antisocial norms of the bonded group. It is through this basic process—opportunity, socialization, bonding, and the development of beliefs—that the SDM explains youth problem behavior over time.

The Present Study

The objective of this study is to examine the unique relationships between religious coping, spirituality, and substance use and abuse among high-risk and gang-involved adolescents and young adults in a community sample in San Salvador, El Salvador. Although research

on the relationship between religiosity, spirituality, and substance use/abuse in the United States suggests a robust relationship, little is known in terms of the relationship between these variables in El Salvador or in the Central American context. As such, drawing from the SDM, this study employs a community sample of high-risk adolescents and young adults to examine the relationship between religious coping, spirituality, key social developmental mediating factors, and substance use and abuse. In addition, the study also examines the associations between religious coping, spirituality, and a variety of particular substance use behaviors. To this end, three primary hypotheses will be examined:

H₁ Higher levels of religious coping and spirituality, as mediated by antisocial bonding and antisocial beliefs, are associated with lower levels of *substance use*.

H₂ Higher levels of religious coping and spirituality, as mediated by antisocial bonding and antisocial beliefs, are associated with lower levels of *substance abuse*.

H₃ When controlling for antisocial bonding and antisocial beliefs, higher levels of religious coping and spirituality are associated with the decreased likelihood of youth involvement in particular substance use behaviors, including public intoxication as well as lifetime and recent alcohol, tobacco, and marijuana use.

Testing these hypotheses extends prior research on the associations between religious coping, spirituality, and substance use and abuse by examining the relationships in a high-risk and under researched population. In all, the goal of the present study is to examine the associations between religious coping, spirituality, and substance use and abuse, both in terms of direct associations and with regards to the pathways of key social developmental factors.

METHOD

Sampling Procedures

This study examines survey data from a purposive sample of 290 adolescents and young adults in urban and semiurban neighborhoods in the Greater San Salvador Metropolitan area collected between June and November 2011. The study was carried out in collaboration with a Salvadoran high-risk youth development organization that works closely with active gang members and high-risk youth across El Salvador. All survey respondents were conceptualized as "high risk" due to the fact that they resided in communities experiencing high levels of various social risk factors for substance use and associated risk behaviors (e.g., socioeconomic marginalization, high levels of community violence, etc.). Survey respondents were recruited by staff members of the youth organization by means of snowball or chain-referral sampling, which is an acceptable method of nonprobability sampling in the study of hard to reach populations (Volz & Heckathorn, 2008). Youth involved in the youth development organization were recruited to participate and were also encouraged to recruit high-risk and gang-involved neighbors, peers, friends, and family members living in the local community to participate in the study as well. Given the extreme conditions of marginalized communities in El Salvador and the difficulty in accessing gang-involved Salvadoran youth, more readily generalizable sampling strategies were not

considered viable. Study procedures were approved by the Institutional Review Boards of Boston College and the Ohio State University.

Survey Design and Translation

The survey instrument was designed to measure the thoughts, beliefs, experiences, and behaviors of high-risk youth across the domains of family, education, employment, and substance use and associated risk behaviors. The original survey instrument was designed for English-speaking North American youth only. To make the survey accessible for Salvadoran youth, a cross-cultural translation procedure was carried out. This multistep process included careful translation, back translation, cognitive interviews, and pilot testing. Importantly, survey items relating to religious coping and spirituality were translated and back translated, but no cognitive interviews or pilot tests were carried out for these constructs.

Data Collection Procedures

Data were collected in community-based youth development centers in a variety of marginalized communities in San Salvador, El Salvador. Given the dangers involved in Salvadoran gang members traveling beyond their designated communities, such on-site data collection was essential to gain access to gang-involved youth. Surveys were administered individually and in small groups by a team of 3 Salvadoran youth development staff members trained at the university level in the social sciences and survey methodology. For the majority of youth, the survey required between 30 and 45 minutes to complete. Youth who were identified as having difficulties in terms of concentration, reading, or writing were administered the survey individually by a member of the research team. All youth were informed that the purpose of the study was to understand the thoughts, beliefs, and behaviors of Salvadoran youth and that, while the results may inform future interventions, they would not be likely to directly benefit from participation in the study. All respondents were given US $5.00 for their participation. All respondents who agreed to the informed consent procedure participated fully in the survey administration.

Measures

Independent Variables—Two primary independent variables were examined in this study: religious coping and spirituality. These two variables share substantial overlap, but nevertheless are unique: *religious coping* relates to the use of religious engagement as a means of managing stressful life events (Pargament et al., 2000); *spirituality*, in contrast, refers to the relationship between an individual and God (or a perceived Transcendence) and may or may not be linked with institutional religious communities or practices (Hodge, 2000).

In this study, both measures were dichotomized so as to facilitate a clear distinction between the presence and absence of each of these hypothesized protective factors. To the extent possible, scores for these protective factors within the appropriate upper quartile were identified as "protective" and coded as "1," whereas the other three quartiles of the sample were considered to be beyond the designated spectrum of protection and thus were coded as "0." In both of these cases, a recoding at the exact 75th percentile was not possible and thus

the closest cut-point available was selected. While some variation exists in terms of the precise operationalized point of risk exposure (Thornberry, Krohn, Lizotte, Smith, & Tobin, 2003), this method of dichotomization by means of the highest/lowest quartile has been identified as having two particular virtues: (1) it is likely to identify only those youth who are genuinely "at risk" or "protected" inasmuch as it is designed to be a cautious measure of exposure and (2) it lends itself to the counting of total protective factors and the examination of cumulative protection (Farrington & Loeber, 2000).

Religious Coping—The measure of religious coping is composed of four positive religious coping items derived from the Measure of Religious Coping (RCOPE) (Pargament et al., 2000). For the purposes of this study, neither the RCOPE nor the brief RCOPE were used in their entirety. However, three of the four RCOPE items used had been previously used together as part of a six-item positive/negative religious coping scale included in the 1998 General Social Survey (GSS). The fourth item—designed to measure comprehensive positive religious coping—was slightly altered as the term "God" was substituted for "religion" to measure deinstitutionalized theistic coping as it was deemed necessary to account for the fact that many gang-involved youth in El Salvador, although perhaps intrinsically religious, tend to not be involved in formal religious communities. Three of the items measured the degree to which respondents were in agreement with religious statements such as, "I look to God for strength, support, and guidance in crises" and "I work together with God as partners to get through hard times." These items had the response format of (1) "not at all," (2) "somewhat," (3) "quite a bit," (4) and "a great deal." The fourth item asked respondents, "To what extent is God helping you to understand or deal with stressful situations in your life?" This item had the response format of (1) "God does not help me," (2) "God helps me a little," (3) God somewhat helps me," (4) and "God helps me a lot." The four-item RCOPE was found to have acceptable reliability and validity with a Cronbach's alpha value of .800 and all items loading cleanly on a single factor (.705–.863).

Spirituality—The Intrinsic Spirituality Scale (Hodge, 2003), which is designed to measure spirituality as a motivational construct for theistic and nontheistic populations alike, is the measure of spirituality. Although this six-item scale has not been validated in the Spanish language, research into the psychometric properties of the scale in English has demonstrated high reliability ($a = .96$) and acceptable validity in terms of goodness of fit and concurrent validity performance (Hodge, 2003). In the English version of the scale, three items were reverse coded; however, in light of previous research as to the dubious psychometric properties of reverse coded items with Salvadoran high-risk youth as well as marginalized and educationally disadvantaged youth in general (Salas-Wright et al., 2013), these three items were adjusted so that all items were positively phrased. The response options for the Intrinsic Spirituality Scale range from 0 to 10, with 0 indicating low levels of spirituality and 10 indicating the highest levels of spirituality. The scale includes items such as, "My spiritual beliefs affect" with response categories ranging from "No aspect of my life" (0) to "Absolutely every aspect of my life" (10). A reduced five-item scale was found to have acceptable reliability and validity with a Cronbach's alpha value of .912 and all items loading cleanly on one factor (.828–.888).

Family Life—The family life variable is a binary measure of the experience of family life of respondents derived from the combination of two binary variables: living with family and significant problems at home. Youth who reported that they (1) lived with their family of origin and that (2) they have no significant problems at home were considered to have a "positive experience living with family" (47.79%) and were coded as 1. Youth who responded "no" to either variable or to both were considered to not meet the criteria of a positive experience living with family (52.21%) and were coded as 0. In addition, in terms of single-mother household status, youth who reported that they lived in a single parent family headed by their mother (62.71%) were coded as 1 and all other youth (37.29%) were coded as 0.

Antisocial Peer Bond—The measure of antisocial peer bond was derived from the Eurogang Program Gang Affiliation Index (Klein, Kerner, Maxson, & Weitekamp, 2001). This two-item adaptation measures the degree to which a youth's peers tacitly endorse and actively carry out illegal or antisocial activities. Peer tacit endorsement of antisocial activity was measured by asking, "Is doing illegal things accepted by or okay for your group?" Peer active engagement in illegal or antisocial activities was measured by asking, "Do people in your group actually do illegal things together?" This measure was found to have a Cronbach's alpha value of .783 indicating acceptable internal consistency.

Antisocial Beliefs—The measure of antisocial beliefs was derived from two binary items included in the Grasmick, Tittle, Bursik, and Arneklev (1993) Self-Control Scale. Within the SDM framework, antisocial beliefs refer to the beliefs of youth related to cheating, lying, and carrying out behaviors believed to be "wrong" to achieve a self-serving end (Catalano & Hawkins, 1996). An example of the antisocial beliefs measure is, "I sometimes find it exciting to do things that might get me into trouble." This two-item measure was found to have a Cronbach's alpha value of .713 indicating acceptable internal consistency.

Dependent Variables

Substance Use—The measure of substance use is composed of three items measuring lifetime cigarette use, marijuana use, and binge alcohol use. Lifetime cigarette and marijuana use were measured by asking, "Have you ever smoked cigarettes?" and "Have you ever used marijuana?" Lifetime binge alcohol use was measured by asking, "Have you ever had 5 or more drinks (for example, beer, wine, or any other type of alcohol) on the same day?" The psychometric properties of this three-item scale were found to be acceptable as the Cronbach's alpha coefficient of .727 indicated acceptable reliability and the loading of all three items on a single latent factor indicated acceptable validity (.776–.826). Six dichotomous items were examined individually as well. Alcohol-related items include lifetime binge alcohol use, recent alcohol use, and public drunkenness. Other items include lifetime cigarette use, lifetime marijuana use, and lifetime "hard drug" use.

Substance Abuse—The measure of substance abuse is composed of a three-item scale designed to measure the abuse of illicit substances. This measure is based on self-report indexes from the Rochester Youth Survey (Thornberry et al., 2003). Sample questions include, "Have you ever felt you should cut down on your drug or alcohol use?" and "Have

you ever felt bad or guilty about using drugs or alcohol?" This three-item measure was found to have acceptable psychometric properties with a Cronbach's alpha value of .764, and all items loading well on a single factor with factor loading values ranging from .647–.774.

Statistical Analysis Plan

Structural Equation Modeling—Two sets of structural equation models were conducted that examined the relationship between religious coping, spirituality, and substance use and abuse among high-risk and gang-involved youth in El Salvador. The virtue of SEM is that it is a statistical technique that allows researchers to specify and test the goodness of fit between sample data and theoretical models designed to depict the causal relationships between observed and latent variables (Kline, 2010). Although the data utilized in this study is cross-sectional and therefore cannot be used to infer causal relationships, mediation analysis is used here in exploratory correlational fashion.

In examining the goodness of fit of hypothesized and modified structural equation models, multiple standard indicators are typically examined. First, the chi-square statistic, although strongly influenced by sample size and other factors, should have a value close to the number of degrees of freedom and a probability value greater than .05 (Kline, 2010). However, given the instability of the chi-square statistic, other measures—such as the root mean square error of approximation (RMSEA), Comparative Fit Index (CFI), and Tucker Lewis Index (TLI)—should also be considered in determining goodness of fit (Tran, 2009). Tran (2009) recommends that the RMSEA value be below 0.05 and no greater than 0.08, and that the CFI and TLI should both be above 0.90.

Consistent with the theoretical framework of the SDM (Catalano & Hawkins, 1996), it is hypothesized that social developmental factors completely mediate the relationship between the exogenous variables and the problem behavioral outcome variables. However, in keeping with the strategy used in a variety of SDM studies (Choi, Harachi, & Catalano, 2006; Herrenkohl et al., 2003), conceptually plausible direct associations between the exogenous variables and dependent problem behavior variables were examined if justified empirically. Six exogenous variables were included in all of the hypothesized structural models: religious coping, spirituality, positive family life, single-mother household status, gender, and age. Given the documented associations between family makeup and youth religiosity/spirituality (Regnerus, 2003b), positive family life and single-mother household status were included as risk and protective covariates in the home/family domain. Gender and age were included as sociodemographic covariates as well.

Logistic Regression—In addition to structural equation modeling, logistic regression analyses also were conducted to examine religious coping and spirituality as potential factors that are inversely associated with a variety of manifestations of substance use and abuse. In contrast to the SEM analyses, all logistic regression analyses were conducted with single-item outcome variables, not composite indexes. Logistic regression was used to examine the relationships between religious coping, spirituality, and particular substance use behaviors coded as binary variables. This method of statistical analysis allows for a more

nuanced examination of the particular manifestations of substance use included in the data set as individual items and not as indexes.

Missing Data—Missing data were addressed via two statistical techniques. Missing data were dealt with in the structural equation modeling analyses by means of the "method(mlmv)" command in Stata 12.1. This command stands for maximum likelihood with missing values and allows for the estimation of fitted parameters in the presence of missing values. Further information regarding this technique has been provided in detail elsewhere (Stata- Corp, 2011). Missing data for the logistic and OLS regression analyses were imputed to maximize the analytical sample size. Imputation was conducted using multiple imputation with chained equations (MICE) via the "ice" command in Stata 12.1. Multiple imputation is an increasingly common procedure by which missing values are estimated and averaged among multiple data sets such that sound parameter estimates and standard errors can be generated (McKnight, McKnight, Sidani, & Figueredo, 2007). A comparison between the coefficients from the imputed and nonimputed data sets showed similar magnitude and directionality, indicating that the imputation procedure did not appear to substantively alter the study results.

RESULTS

Descriptive Statistics

Table 1 presents descriptive statistics for study respondents as categorized by developmental age group. Three fifths of respondents were young adults (60.0%), whereas the remaining two fifths of respondents were adolescents (40.0%). Although both groups were predominantly male, a greater percentage of young adult respondents were male compared with adolescent respondents (83.2% vs. 76.7%, $p < .01$). Young adults were far more likely than their adolescent counterparts to report having one or more children (51.2% vs. 26.9%, $p < .001$) and to be actively employed (49.0% vs. 33.3%, $p < .001$). In the domain of school, adolescent respondents were far more likely than young adults to be enrolled in school (58.0% vs. 31.4%, $p < .001$) and reported a greater number of overall years of education ($M = 7.09$ vs. 6.47, $p < .01$). In addition, although adolescent respondents were more likely than young adults to report having difficulty in school (24.5% vs. 17.7%, $p < .01$), no significant interage group differences were identified in terms of reading difficulty or school dropout rates. In terms of risk and protective correlates, relatively few differences were identified between the adolescent and young adult populations. Adolescents scored slightly higher than young adults in terms of religious coping (7.88 vs. 7.25, $p < .001$), whereas young adults scored higher on the measure of spirituality than did their adolescent counterparts (37.60 vs. 34.00, $p < .001$). Similarly, young adults reported slightly higher levels of delinquent peer involvement than did adolescent respondents (0.75 vs. 0.67, $p < .05$).

Figure 1 illustrates the comparative prevalence of problem behavior involvement among adolescent and young adult respondents. The prevalence of substance use involvement for adolescents and young adults ranged between just above 25% for adolescent public drunkenness to as high as roughly 80% for lifetime cigarette use for both adolescents and young adults (83.5% and 76.5%, respectively). As for interage group differences, with the

exception of lifetime cigarette use, young adults reported higher levels of substance use involvement across the board. Several differences were particularly pronounced with young adults reporting far greater rates of recent alcohol use (54.88% vs. 37.38%, $p < .001$), public drunkenness (41.46% vs. 25.47%, $p < .001$), and lifetime drug use (38.71% vs. 28.70%, $p < .001$) than their adolescent counterparts.

Structural Equation Modeling

Structural equation modeling was conducted to test the theoretical models designed to account for the relationships between religious coping, spirituality, and the use and abuse of illicit substances. For each of the models examined, two sequential steps were carried out in running the structural equation analyses for each of the dependent variables. First, the proposed models were tested and evaluated in terms of goodness of fit and, if necessary, adjusted on the basis of empirically derived modification indices and theoretical coherency. Second, modified structural equation models were examined and assessed in terms of the fit of the overall model and individual parameters.

Tests and Modification of Proposed Models—As presented in Table 2, the goodness of fit statistics for the proposed models indicated moderate fit for substance use and acceptable fit for substance abuse. Nevertheless, important modifications were suggested to improve the overall fit for both models.

First, modification indices suggested that paths for several direct relationships be added between the exogenous factors and the dependent variables. For the substance use model, it was suggested that spirituality, family life, and age all be allowed to directly associate with substance use. For the substance abuse model, it was suggested that spirituality, family life, and gender be allowed to directly associate with substance abuse. As noted previously, these direct relationships are noteworthy as the SDM hypothesizes that the relationships between all exogenous factors and dependent variables are fully mediated by social developmental factors. Given that all of these direct relationships are certainly theoretically plausible, however, each of these paths was added in their respective models.

Second, modification indices suggested that two error terms were correlated in the substance abuse model. More precisely, the error term for "people criticizing use" was correlated with the error term for "feeling guilty over use." Given that these two variables are highly conceptually related, is certainly plausible that the error terms are correlated. As such, the error terms for these two variables were allowed to correlate in the substance abuse model. No error terms were found to be correlated in the substance use model.

Modified Structural Model for Substance Use—As seen in Table 2, all of the goodness of fit statistics for the modified substance use model indicated acceptable model fit. The chi-square statistic was not significant and the chi-square value of 50.67 was relatively close to the number of degrees of freedom for the model (45). In addition, the RMSEA value of 0.021, the CFI value of 0.989, and the TLI value of 0.985 were all well within the range of acceptable fit. This model was not found to have any identification problems, and no additional plausible modifications were identified.

Figure 2 presents the standardized path model for the relationship between religious coping, spirituality, and substance use and lends partial support to *Hypothesis 1*. Although religious coping was not found to be directly or indirectly associated with substance use, the relationship between spirituality and substance use was found to be partially mediated by social developmental factors. Spirituality was associated with antisocial bonding ($\beta = -.16$, $p < .05$) which, in turn, was associated with antisocial beliefs ($\beta = .56$, $p < .001$) which, subsequently, was associated with substance use ($\beta = .28$, $p < .001$). Spirituality was also directly associated with substance use ($\beta = -.30$, $p < .001$), indicating that high levels of spirituality are associated with lower rates of substance use.

Modified Structural Model for Substance Abuse—As seen in Table 2, the goodness of fit indices for the modified substance abuse model also indicated acceptable model fit. The chi-square statistic of 35.97 was not significant and was relatively close to the number of degrees of freedom for the model (45). In addition, the RMSEA value of 0.000, the CFI value of 1.00, and the TLI value of 1.029 were all in the far upper range of goodness of fit values. No problems were identified in terms of model identification, and no additional plausible model modifications were identified.

Figure 3 presents the standardized path model for the relationship between religious coping, spirituality, and substance abuse and lends partial support to *Hypothesis 2*. Religious coping was not found to be mediated by social developmental factors and was not found to be directly associated with substance abuse. Spirituality was, however, found to be directly associated with substance abuse ($\beta = -.17$, $p < .05$), indicating that elevated levels of spirituality were associated with lower rates of substance abuse. In addition, the relationship between spirituality and substance abuse was partially mediated by social developmental factors. Namely, spirituality was associated with antisocial bonding ($\beta = -.17$, $p < .05$), which was associated with antisocial beliefs ($\beta = .56$, $p < .001$) which, in turn, was associated with substance abuse ($\beta = .20$, $p < .05$).

Logistic Regression

Tables 3 and 4 lend partial support to *Hypothesis 3*. Table 3 presents the results of three separate logistic regression analyses examining the relationship between spirituality, religious coping, and three manifestations of alcohol use: lifetime binge alcohol use, recent alcohol use, and recent public drunkenness. Spirituality was found to be significantly associated with the decreased likelihood of lifetime binge alcohol use (OR = 0.30, 95% CI = 0.14–0.64), recent alcohol use (OR = 0.27, 95% CI = 0.12–0.58), and public drunkenness (OR = 0.27, 95% CI = 0.11–0.64). No significant associations were identified between religious coping and any of these manifestations of alcohol use.

Finally, Table 4 presents the results of four separate logistic regression analyses examining the relationship between spirituality, religious coping, and a variety of cigarette, marijuana, and drug use behaviors. Consistent with the results for the relationships between spirituality and alcohol use, spirituality was found to be significantly associated with all forms of substance use examined in this analysis. Religious coping was only found to be marginally associated with decreased likelihood of lifetime marijuana use (OR = 0.48, 95% CI = 0.22–

1.06) such that the odds of smoking marijuana were 52% lower among highly religious youth than among their less religious peers.

DISCUSSION

Spirituality, Religious Coping, and Substance Use/Abuse

This study is among the first to systematically examine the relationships between religious coping, spirituality, and substance use and abuse among a community sample of high-risk and gang-involved youth in El Salvador. Overall, results indicate that spirituality and, to a far lesser degree, religious coping are inversely associated with Salvadoran high-risk and gang-involved youth's use and abuse of drugs and alcohol. Contrary to the study's hypotheses, however, social developmental factors only partially mediated the relationship between spirituality and substance use and abuse. Moreover, the direct effects between spirituality and substance use and abuse were substantially greater than the indirect effects as mediated by social developmental factors. This finding is significant as it suggests that the relationship between spirituality and substance use behaviors was not primarily mediated by social developmental factors, but rather that, even when taking into account social bonding and antisocial beliefs, spirituality was directly associated with substance use and abuse among youth.

Although the partial mediation of these relationships by means of social developmental factors lends some support to the SDM (Catalano & Hawkins, 1996), the direct relationship between spirituality and substance use and abuse also lends credence to the work of other theorists concerned with the direct relationships between these factors (Regnerus, 2003c, Smith, 2003). For instance, Regnerus (2003c) has suggested that many religiosity scholars run the risk of being "reductionistic" in terms of conceptualizing of the relationship between religiosity, spirituality, and problem behaviors exclusively through the lenses of social control and social learning. Furthermore, Regnerus has suggested that an awareness of the potential direct explanatory effects of religiosity and spirituality on problem behaviors is essential as it allows for measurement of intangible components of religiosity and spirituality that may not be entirely accounted for by means of social relationships and moral beliefs. Notably, in the structural equation modeling, no significant direct or indirect relationships were identified between religious coping and substance use.

Across the board, the results of the logistic regression analyses suggest a robust relationship between spirituality and involvement in a wide variety of substance use behaviors. Indeed, spirituality was found to be inversely associated with all measures of alcohol use behavior, cigarette use, and marijuana and "hard drug" use included in the study. These findings are in keeping with the general trend in the literature in terms of the protective effect of spirituality for substance use behavior (Hodge, Cardenas, &Montoya, 2001; Yeung, Chan, & Lee, 2009). Notably, despite the strength of the relationship between spirituality and substance use, among all substance use and abuse measures examined in the study, logistic regression analyses revealed that religious coping was only found to be associated with lifetime marijuana use. Moreover, as noted above, no significant direct or mediated relationships were identified between religious coping and the composite measures of substance use and abuse in the structural equation model analyses.

Three points of interpretation should be noted in terms of the general null findings between religious coping and substance use and abuse. First, although it was hypothesized that religious coping would be universally associated with substance use and abuse behaviors and not simply with marijuana use, the association between religious coping and marijuana use among youth in this sample is certainly consistent with a number of studies conducted in the United States (Hodge, Marsiglia, & Nieri, 2011; Marsiglia, Kulis, Nieri, & Parsai, 2005). Second, however, it is worth highlighting that the lack of association between religious coping and other forms of substance use is in direct contrast with a substantial body of literature that suggests that religiosity and religious coping are important protective factors for tobacco, alcohol, and "hard drug" use among youth (Brechting & Giancola, 2007; Hodge et al., 2011; Marsiglia et al., 2005). Finally, it is noteworthy that, compared with tobacco and alcohol use, marijuana use may be conceptualized as a relatively severe form of substance use behavior as cannabis use represents not only a status offense but also the use of a universally illicit substance in El Salvador. This finding raises questions about the role of religious coping as a candidate protective factor in the Salvadoran context as it appears that religious coping, while ostensibly dormant in terms of its association with minor substance use behaviors, is robustly associated with the use of more severe substances such as marijuana.

Study Assets and Limitations

Among the strengths of this study were the unique character of the sample and the use of standardized, multiple item measures of religious coping and spirituality. To begin, the sample is unique inasmuch as respondents include a sizable proportion of active Salvadoran gang members living in their home communities. Few, if any, quantitative studies of Salvadoran high-risk youth and gang members have included substantial proportions of active youth gang members. Second, the measures of religious coping and spirituality used in this study were more psychometrically complex than the single item measures that are frequently used in research into the relationship between religious coping, spirituality, and problem behavior. Although these measures certainly do not capture all the rich complexity of religiosity and spirituality in the lives of Salvadoran youth, the use of such validated, multiple item measures, nevertheless, allows for a potentially greater precision of measurement of these key constructs than is typically the case in many studies in the research literature.

Despite these strengths, findings from this study should be interpreted in light of several important limitations. A number of these limitations were a function of the sampling methodology and sample size. First, given that the study data are cross-sectional, causal conclusions regarding the relationships between religious coping, spirituality, and substance use and abuse cannot be drawn. As such, although many studies of religiosity, spirituality, and substance use speak of protective relationships, our results preclude us from interpreting the cross-sectional associations in such terms. Second, as a nonrandomized purposive sample, the results of this study are limited in terms of generalizability. Indeed, this study effectively functions as a large pilot study from which hypotheses can and should be derived, but it does not expand needed generalizable knowledge about the dimensions and processes of religious coping, spirituality, and substance use and abuse in El Salvador or

even, perhaps, in San Salvador's at-risk populations. Finally, although the sample size was certainly large enough for all analyses conducted in this study, the relatively limited sample size ($N = 290$) and distribution of key demographic variables, such as age and gender, did create limitations in terms of the comparison across groups. This limitation is noteworthy given that the ages of study participants span two distinct developmental time periods.

Implications and Conclusions

The findings from the present study may have important implications for the development and implementation of preventative interventions designed for substance use in high-risk contexts in San Salvador. For instance, results consistently indicate that higher levels of spirituality are associated with lower rates of substance use and substance abuse. As such, this suggests that integrating modules into interventions that allow for interested young people in El Salvador to explore and cultivate their own sense of spirituality may be worthwhile. In addition, given that the relationship between spirituality and substance use was found to be mediated by peer bonding and beliefs, interventions may also take into account the ways in which these factors interact in the lives of young people. That is, interventionist should take care to avoid relying upon over-simplified logic (i.e., "more spirituality, less substance use") and, rather, strategically consider how spirituality is of relevance to social and ideological factors that are related to the initiation and abuse of illicit substances. Such an approach may be particularly salient when working with gang-involved youth in the Salvadoran context. Indeed, given that comorbidity of substance use and externalizing behaviors has been found to be highly prevalent among young people in El Salvador (Olate et al., 2011) and beyond (Vaughn, Salas-Wright, DeLisi, & Maynard, 2013; Vaughn, Salas-Wright, & Maynard, in press), substance use interventions designed for high-risk and gang-involved Salvadoran youth may be enhanced by also targeting co-morbid behaviors such as delinquency and violence. Future research is also necessary to examine how, similar to the cultivation of spirituality, becoming part of a youth gang may be linked with a search for interconnectedness with others and a way of attempting to make sense of a fragmented social context (Alexander, 2010). In all, although interpretive caution is necessary due to study limitations related to generalizability and causality, findings from this study suggest that spirituality may be an important component of the prevention of youth substance use in high-risk contexts in San Salvador, El Salvador.

Empirical research conducted in United States and in other developed nations has consistently indicated that religiosity and spirituality serve to protect youth from involvement in substance use and abuse. However, relatively little is known as to the nature of these relationships among high-risk and gang-involved youth in El Salvador and, more broadly, in Central America. Overall, the results of this study indicate that spirituality, independent of social developmental factors, is directly associated with youth substance use and substance abuse as well as a variety of particular substance use behaviors. Despite the strength of the relationship between spirituality and these outcomes, with the exception of lifetime marijuana use, religious coping was not found to be directly or indirectly associated with substance use or abuse. In sum, although scholars had previously suggested that protective relationships might be identified between religious coping, spirituality, and substance use among high-risk and gang-involved youth in El Salvador, this study provides

preliminary empirical evidence as to the direct and mediated associations between these factors among youth in a community sample. While certainly further research with longitudinal and generalizable samples is necessary, results from this pilot study suggest that spirituality and, to a far lesser degree, religious coping may function as protective factors for Salvadoran adolescent and young adult involvement in substance use and abuse.

Acknowledgments

GLOSSARY

Religious coping	The utilization of religion as a strategy for managing stressful life events. Religious coping is typically conceptualized as sharing substantial overlap with the broader construct of religiosity
Spirituality	The relationship between an individual and God (or a perceived Transcendence). This relationship may or may not be linked with institutional religious communities or practices

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Biographies

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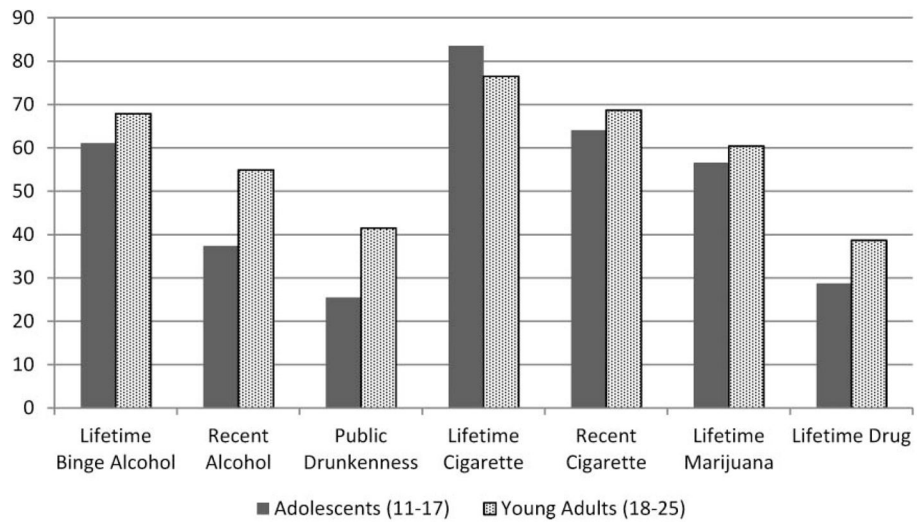
FIGURE 1.
Percentage of substance use involvement among adolescent and young adult respondents.

FIGURE 2.
Modified substance use model. Structural equation model for relationship between religious coping, spirituality, and substance use. *p* < .05, ***p* < .001. χ^2 (*df*) = 50.67 (45), RMSEA = 0.021, CFI = 0.989, TLI = 0.985, R^2 = 0.420. A1 = Peer endorsement of illegal behavior, A2 = peer of illegal behavior, A3 = risks for fun, A4 = exciting to do things that get in trouble, A5 = lifetime alcohol use, A6 = lifetime cigarette use, A7 = lifetime marijuana use.
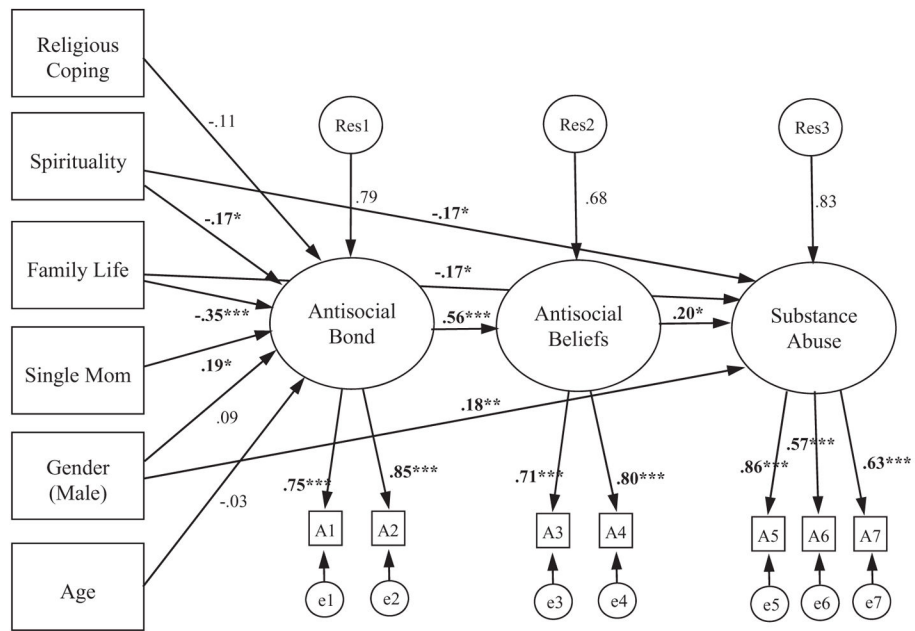
FIGURE 3.
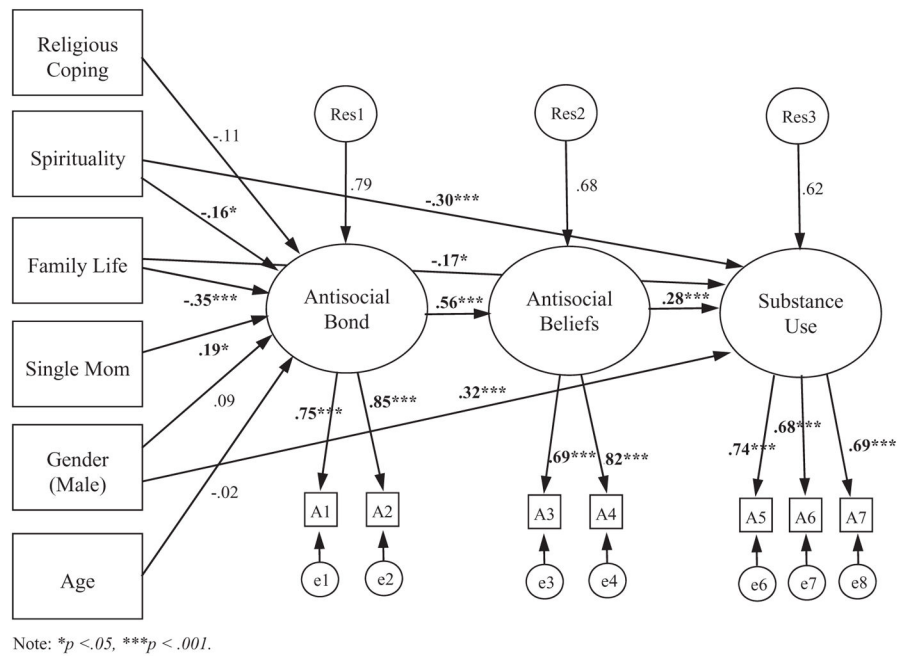Modified substance abuse model. Structural equation model for relationship between religious coping, spirituality, and substance abuse. *p < .05, **p < .01, ***p < .001. χ^2 (df) = 35.97 (45), RMSEA= 0.000, CFI = 1.00, TLI= 1.029, R^2 = 0.289. A1 = Peer endorsement of illegal behavior, A2 = peer of illegal behavior, A3 = risks for fun, A4 = exciting to do things that get in trouble, A5 = feel you should cut down, A6 = people criticize your use, A7 = feel guilty about use.

TABLE 1

Sociodemographic characteristics and risk/protective factors among adolescents and young adults (*N* = 311)

	Adolescents (age 11–17 years) N = 116			Young adults (age 18–25 years) N = 174			*t/χ²*
	M(SD)	%	Range	*M(SD)*	%	Range	
Demographic factors							
Age	15.17 (1.7)		(11–17)	20.64 (2.1)		(18–25)	−56.98*
Male		76.7	(0–1)		**83.2**	(0–1)	11.28**
Have a child		26.9	(0–1)		**51.2**	(0–1)	99.83*
Academic and vocational factors							
School enrolled		**58.0**	(0–1)		31.4	(0–1)	106.82*
Years of education	**7.09 (3.4)**			6.47 (4.6)			3.04**
Trouble in school		**24.5**	(0–1)		17.7	(0–1)	11.53**
Reading trouble		32.2	(0–1)		33.3	(1–3)	0.28
School dropout		43.7	(0–1)		49.9	(0–1)	0.96
Employed		33.3	(0–1)		**49.0**	(0–1)	13.09*
Family and peer factors							
Positive family		49.2	(0–1)		50.1	(0–1)	0.13
Single mother		64.5	(0–1)		61.0	(0–1)	2.14
Delinquent peers	0.67 (0.8)		(0–2)	**0.75 (0.9)**		(0–2)	6.20***
Individual factors							
Religious coping	**7.88 (3.2)**		(4–16)	7.25 (2.9)		(4–16)	4.20*
Spirituality	34.00 (12.8)		(0–50)	**37.60 (11.5)**		(0–50)	−6.12*
Risk beliefs	0.95 (0.9)		(0–2)	0.91 (0.9)		(0–2)	0.84

*
p < .001,

**
p < .01,

***
p < .05.

Coefficients in bold represent statistically significant differences at *p* < .05 or lower.

TABLE 2

Goodness of fit results from proposed and modified structural equation models for spirituality, religious coping, and substance use/abuse

Fit indexes	Substance use		Substance abuse	
	Proposed	**Modified**	**Proposed**	**Modified**
χ^2 (*df*)	**104.44 (48)**[***]	50.67 (45)	52.57 (48)	35.97 (45)
RMSEA	0.064	0.021	0.018	0.000
CFI	0.896	0.989	0.989	1.00
TLI	0.863	0.985	0.986	1.029
R^2	0.230	0.420	0.219	0.289

[***]
$p < .001$.

Coefficient in bold is statistically significant at $p < .05$ or lower.

TABLE 3

Associations between religious coping and spirituality, additional risk and protective factors, and alcohol use behaviors among respondents 11–25 years of age

	Lifetime binge alcohol use		Recent alcohol use		Public drunkenness	
	OR	95% CI	OR	95% CI	OR	95% CI
Individual						
Spirituality	**0.30**[*]	**(0.14–0.64)**	**0.27**[*]	**(0.12–0.58)**	**0.27**[*]	**(0.11–0.64)**
Religious coping	0.80	(0.36–1.76)	1.01	(0.47–2.16)	0.67	(0.28–1.60)
Antisocial beliefs	**1.87**[*]	**(1.24–2.83)**	1.17	(0.83–1.66)	1.35	(0.94–1.4)
Family & peers						
Family life	**0.51**[**]	**(0.27–0.99)**	**0.50**[**]	**(0.28–0.91)**	0.69	(0.36–1.31)
Single mother	0.83	(0.43–1.63)	1.24	(0.63–2.45)	1.50	(0.76–2.98)
Delinquent peer bond	0.73	(0.17–3.16)	1.28	(0.49–3.36)	**2.82**[**]	**(1.10–7.22)**
Control variables						
Age	**1.09**[**]	**(1.00–1.19)**	**1.11**[**]	**(1.02–1.21)**	**1.15**[*]	**(1.04–1.26)**
Male	**4.31**[***]	**(2.11–8.80)**	**5.11**[***]	**(2.24–11.62)**	**4.15**[*]	**(1.56–11.05)**
N	281		271		270	

[*]
$p < .01$,

[**]
$p < .05$,

[***]
$p < .001$.

Odds ratios in bold are statistically significant at $p < .05$ or lower.

TABLE 4

Associations between religious coping and spirituality, additional risk and protective factors, and cigarette, marijuana, and "hard drug" use among respondents 11–25 years of age

	Lifetime cigarette use		Lifetime marijuana use		Lifetime "hard drug" use	
	OR	95% CI	OR	95% CI	OR	95% CI
Individual						
Spirituality	**0.21**[*]	**(0.09–0.49)**	**0.40**^{**}	**(0.20–0.83)**	**0.33**^{**}	**(0.14–0.79)**
Religious coping	0.92	(0.34–2.52)	0.48^{***}	(0.22–1.06)	1.93	(0.78–4.76)
Antisocial beliefs	1.26	(0.81–1.96)	1.63[†]	**(1.16–2.31)**	**1.49**^{**}	**(1.05–2.12)**
Family & peers						
Family life	0.55	(0.26–1.15)	0.55^{***}	(0.30–1.01)	**0.33**[*]	**(0.18–0.61)**
Single mother	1.49	(0.65–3.42)	1.53	(0.77–3.03)	0.91	(0.45–1.83)
Delinquent peer bond	0.70	(0.23–2.08)	1.14	(0.42–3.14)	0.93	(0.42–2.06)
Control variables						
Age	1.00	(0.91–1.11)	1.07	(0.98–1.16)	1.03	0.95–1.13)
Male	**4.11**[*]	**(1.91–8.87)**	2.93[†]	**(1.44–5.97)**	**3.00**^{**}	**(1.30–6.92)**
N		256		277		263

[*] p < .001,

^{**} p < .05,

^{***} p < .10,

[†] p < .01.

Odds ratios in bold are statistically significant at p < .05 or lower.