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Parent psychopathology and adolescent externalizing behavior

By

Laura Katharine Pierce

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ABSTRACT

Parent psychopathology and adolescent externalizing behavior

By

Laura K. Pierce

Parental psychopathology and deviant peers have been long acknowledged as a risk factors for adolescent development. However, it is unclear as to whether and to what extent religiosity mediates the negative impact on adolescent problem behavior outcomes. Furthermore, the question remains as how comorbid parental psychopathology may moderate the relationship between externalizing behavior and specific problem behaviors such as alcohol use, alcohol-related problems, and antisocial behavior. This dissertation explored these questions with a sample of 672 adolescents and their parents from the Michigan Longitudinal Study (MLS). Although parental and adolescent religiosity individually predicted externalizing behavior, they dropped from significance in the full model.

Results from latent growth modeling showed that externalizing behavior differentially predicted alcohol use, alcohol-related problems and antisocial behavior, with stronger, more consistent results found with self reported externalizing behavior. Moderation analyses indicated that there was a stronger relationship between externalizing behavior and the intercept of alcohol use and antisocial behavior and the slope of alcohol-related problems for adolescents from antisocial alcoholic homes. Overall, these results support the literature on typological differences in alcoholism, and support findings from previous MLS studies.

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INTRODUCTION

Alcoholism is one of the most pervasive and destructive diseases in the United States. Estimates suggest that nearly one-third of U.S. men and fifteen percent of U.S. women meet criteria for a lifetime alcohol use disorder (AUD) diagnosis, and nearly 5 millions of these adults are parents (Kessler et al., 1994; SMHSA, 2003; termed "alcoholism" for the purposes of this research). An estimated 6 million youth live with parents diagnosed with alcoholism (SAMHSA, 2004). For these children of alcoholics (COAs), the risk of a future diagnosis of alcoholism is several times greater than that of the general population (Russell, 1990; Sher, 1991). Beyond the risk for future alcoholism, the literature has also established that alcoholism is detrimental to COAs' social, emotional, scholastic, and vocational development (Leonard et al., 2000; Sher, 1991).

Yet being raised in an alcoholic family does not definitively resign one to abuse alcohol or engage in risky behavior throughout the lifespan, as most COAs develop into healthy, well functioning adults (Sher, 1991). This combination of being "at-risk" for negative outcomes, and yet maintain a normal developmental trajectory defines the concept of "resilience" (Jessor, Van Den Bos, Vanderryn, Costa, & Turbin, 1995; Masten, 2001; Masten, & Coatsworth, 1998; Sroufe, 1997). Alcoholism research in general, and the Michigan Longitudinal Study (MLS) in particular, focuses on factors that accelerate or reduce the risks associated with different subtypes of alcoholism (Zucker, Fitzgerald, Refior, Puttler, Pallas, & Ellis, 2000; Fitzgerald, Zucker, & Yang, 1995).

Of interest in resilience research is the influence of protective factors, which hypothetically mediate the impact of risk factors. Specifically of interest for this study

was religiosity's role as a mediator in at-risk adolescents. There are a number of advantages in studying religiosity as a protective factor: a recent report published by SMAHSA (2004) showed that the vast majority of U.S. teens report that religion was not only considered important, but it was also a factor in their decisions regarding their behavior. Research supports the role of religiosity in protecting against a variety of adverse outcomes in studies utilizing adult and adolescent samples (e.g., Koenig et al., 1992; Koenig, George, & Peterson, 1998; Tix & Frazier, 1998; Wills, Yaeger, & Sandy, 2003). However, none of the available research has used an "at-risk" sample. Thus, the question remains whether pre-existing parental psychopathology changes the influence of mediating protective [i.e., parent and adolescent religiosity] and risk factors [i.e., deviant peer relationships] on adolescent behavior outcomes, and the degree to which these relationships differ according to parental comorbid anti-social personality disorder (ASPD).

This research seeks to (a) test the extent to which parental psychopathology (alcoholism, depression, and antisocial behavior) predicts externalizing behavior, which in turn predicts the initiation and trajectory of adolescent deviant behavior (alcohol use, alcohol-related problems, delinquency), (b) investigate the relative influence of risk (deviant peer relationships) and protective (parent and adolescent religiosity) factors as mediators in the context of parental psychopathology, and (c) the extent to which these relationships are moderated by parental antisocial personality disorder (ASPD).

LITERATURE REVIEW

Theories of adolescent problem behavior

Since the delineation of adolescence by Hall (1904) and others, and its vicissitude of problem behavior as unique phenomena during this developmental stage, adolescent problem behavior has received an increasing amount of attention from various sectors, both secular and religious. In the last three decades, researchers in mental health related professions in general, and within psychology in particular, have become interested in multiple dimensions of problem behavior, especially its etiology, course and potential prevention and intervention. Such interest has resulted in the development of several theories which propose to explain the development of problem behaviors during adolescence.

One of most frequently cited empirically based theories of problem theory was formulated by Jessor and Jessor (1977). They stipulate that numerous internal and external factors influence the likelihood and degree of adolescent involvement in problematic or conventional behavior. Conventional behaviors are those which conform to the greater social norms of one's family, prosocial peers, community and society. Examples include academic achievement, going to church, delaying sexual activity, and refraining from alcohol, cigarettes or illegal drugs. Problem behaviors, on the other hand, include those behaviors seen as socially unacceptable or signifying a departure into an older and presumably more elite group. Examples of unacceptable behaviors include engaging in illicit drug use, stealing, vandalism, and other forms of delinquency. Behaviors deemed to be premature endeavors into "adulthood" include drinking alcohol, smoking and sexual intercourse. Adolescents are especially prone to "acting out" in a

deviant manner given their transient developmental status between dependence (childhood) and independence (adulthood), lack of clear roles, and growing cognitive abilities. Despite the obvious benefits of preventing problem behaviors for the larger society and for adolescents themselves, it remains difficult to determine which, and to what degree, adolescents will become involved in potentially harmful activities in the absence of a single or chief predictor of deviance.

In Jessor and Jessor's (1977) conceptualization, overt behavior (problem or otherwise) is the result of three interrelated systems: personality, perceived environment, and behavior. Each is further broken down into subsystems. The personality system consists of the three subsystems of motivation, beliefs and control. Each of these facets functions to promote or deter the problematic or conventional behaviors. Perceived environment is made up of environmental factors, be they individual people (e.g., parents or friends) or involvement in groups or associations (e.g., school, extracurricular groups, religious organizations), and provide support or opposition for problematic or conventional behavior. The behavior system is composed of the conventional and problem behavior subsystems, the manifestations of behavior that both result in the previous systems' functioning and perpetuates their respective typology of behavior. Ultimately, the interactions within and between these systems either support or impede the likelihood of problem (or conventional) behavior. Of interest to this research is the relationship between parent, peer and adolescent behaviors, both problematic and conventional.

The Jessors' theory was initially validated using two community samples: one stratified sample of high school and another sample of college freshmen followed

throughout their collegiate careers. Among their findings, they identified the significant co-occurrence of deviant behaviors within these samples. While the implication of causation between engaging in one behavior and another was explicitly denied, problematic (as well as conventional) behavior begot respectively similar, as opposed to dissimilar, behaviors. This pattern observed among deviant behaviors was more broadly conceptualized as a "problem behavior syndrome" (Jessor & Jessor, 1977).

Beyond the trends in problematic and conventional behaviors, the relationships between parental, peer, and adolescent behaviors were investigated. In particular, perceived attitudes of family and friends towards conventional versus unconventional activities were identified as important factors in adolescent behavior. Within the family, parents played an important role. For instance, in their sample of high school students, parental acceptance of deviant behaviors was related to greater adolescent involvement in deviant behaviors. Likewise, Jessor and Jessor (1977) also found that adolescent perceptions of peer group attitudes and behaviors were significantly associated with adolescents' own behaviors. Peers who were reported to engage in deviant activities were related to greater adolescent involvement in similar behaviors, and were inversely related to adolescent worship attendance.

Through analyses of problematic-conventional behavior relationship, one of the most pertinent findings from the Jessors' research was their identification of religiosity as a protective factor in their sample. In particular, they found that religious upbringing, as well as religious beliefs and worship attendance, were inversely related to problem behaviors. Based on their analyses showing evidence for parental religiosity to play a secondary role to adolescent religiosity, they argue that parental influence sets up the

foundation for religious socialization, the internalization of which is the crucial aspect that reduces adolescent involvement with problem behaviors. Furthermore, they postulate that adolescence was a critical period of sorts, during which the seeds for conventional behavior that function via socialization with a religious institution solidify or disperse.

Another perspective relevant to the present research was Hirschi's (1969) social control theory of delinquency. Based on work with adolescents, Hirschi asserts that the development of conforming behavior during childhood and adolescence is a function of socialization in and attachment to various social systems, including family, peer, school and religious institutions. The degree of attachment to a system (e.g., whether allegiance to the system is supportive, conditional, or divergent), as well as system characteristics (e.g., nurturing, neutral, ambivalent or destructive), shapes behavior outcomes. Thus, whether an adolescent's parents maintain an influence on his/ her life and whether the parents endorsed pro- or antisocial activities would determine the level of adolescent problem behavior.

Hirschi found that parental supervision and closeness of the parent-child relationship were negatively correlated with boys' delinquent acts. In the absence of a close parent-child relationship, peer influences became primary and related to adolescent delinquency, such that these adolescents had more delinquent friends and higher levels of delinquent behavior. Conversely, adolescents who were socialized in a "conventional", prosocial family, presumably engaged with fewer delinquent peers and showed less problem behavior. From Jessors' view, prosocial adolescents should maintain a greater affiliation with a religious institution than delinquent adolescents, although this hypothesis was not explicitly tested in Hirschi's study.

Though his theory and results inform the literature, the applicability of these results to other samples is dubious. Although the sample that Hirschi (1969) initially worked with was representative of both genders and several ethnicities, he performed statistical analyses primarily on data from male Caucasian and/ or African American adolescents. Thus, his findings may have less relative utility for describing problem behavior in a more diverse sample.

Nearly thirty years later, both theories continue to guide current research on adolescents, with various levels of support. DeCourville's (1995) effort to replicate the Jessors' findings found support for problem behavior co-occurrence in a large sample of Canadian high school students. More recently, Willoughby, Chalmers, and Busseri (2004), using a Canadian high school recruited sample, found support for the Jessor's conceptualization of a three factor problem behavior model. Their results show that substance use and less serious delinquent behaviors load on a general "problem behavior" factor, whereas serious delinquency and aggression load onto separate factors and thus do not emerge from the same construct. Furthermore, the extent to which adolescents were engaging in "high-risk" involvement in multiple problem behaviors was circumscribed to alcohol and marijuana use, less serious delinquency, and aggression. These results provide moderate support for the "problem behavior syndrome" in which various types of minor delinquency are observed to co-occur. In addition, the findings are in line with Moffitt's (1993) assertion that certain deviant behaviors, particularly those deemed acceptable for adults, are "normative" during adolescence.

Guided by Hirschi's work (1969), Warr (1993) and Longshore, Chang, Hsieh, and Messina (2004) attempted to find support for social control theory. Warr (1993), using

data from the National Youth Survey, examined the relationship between parent and peer influences on adolescent delinquency. Warr's results, similar to Hirschi's (1969), show that prosocial parental influence does not directly predict less delinquent activity, but rather influences the selection and exposure to antisocial peers, which was strongly and positively associated with adolescent delinquency. Whether parental psychopathology would exacerbate these relationships is unknown, since Warr's analyses didn't control for parental variables.

Longshore et al. (2004) tested the relative influence of social versus self control in predicting substance use. They found that both substance-using peers and level of moral belief mediated the relationship between low self control and drug use; paths from religiosity, positive relationships with family, and involvement in intimate and work relationships were not related to substance abuse. However, their sample was limited to adult male prisoners with severe, chronic offending histories. Given the well-documented evidence that individuals with extensive criminal histories may differ significantly from less severe and/ or chronic offending patterns (Moffitt, 1993), these findings may not generalize to a younger sample of at-risk female and male adolescents. As these studies show, research using these theories to explain behavior in other samples was inconsistent. Thus, the generalizability of results to the current research study is uncertain.

This dissertation utilizes a sample of adolescents at-risk by virtue of parental alcoholism and associated psychopathology. Jessor and Jessor's problem behavior (1977) or Hirschi's (1969) work on social control provide compelling theoretical backgrounds from which to conceptualize the empirical literature on alcoholism, adolescent children of alcoholics, and religion as a protective factor. Both theories highlight the unique qualities

of adolescence as pivotal in regards to long term developmental consequences, the importance of parent and peer behavior and their influence on adolescent behavior, the potential for the protective nature of religion to mediate otherwise unfortunate circumstances.

Parental alcoholism and psychopathology as risk factors

Recent estimates indicate that nearly five million parents meet criteria for alcoholism (SAMHSA, 2003), putting millions of children subsequently at risk for alcoholism, given the strong evidence of intergenerational transmission of alcoholism (Cloninger, 1987; Cotton, 1979). The lifetime prevalence rates of alcoholism and strong empirical evidence of intergenerational transmission for the disorder highlight the necessity of research focused on prevention and intervention. Although risk for alcoholism is acknowledged as having genetic (Cloninger, 1987; Sher, 1991), neurophysiological (Schuckit, 1994), and psychosocial roots (Sher, 1991), this research will focus on the psychosocial aspects of risk and resilience associated with alcoholism, which are inherently more amenable to intervention.

Alcoholism has both direct and indirect effects on COAs' development via genetic, biological and environmental pathways (Fitzgerald, Zucker, Mun, Puttler & Wong, 2002; Zucker, 1994). In their review, Fitzgerald, Zucker, and colleagues (2002) highlight evidence of genetic and neurological differences between COAs and non-COAs, and the role of in utero alcohol exposure in exacerbating these biological risk factors. When these children with high biological risk are raised by alcoholic parents, behavioral manifestations of their future risk for psychopathology are observed early on (Zucker, Ellis, Bingham, & Fitzgerald, 1996).

Predictors of early onset of drinking and externalizing behaviors, such as difficult temperament, high level of novelty seeking and impaired ability to avoid harm, have been documented in infants and toddlers, as well as preschool and elementary school aged children (Mun, Fitzgerald, von Eye, Puttler, Zucker, 2001; Das Eiden, Chavez, & Leonard, 1999; Masse & Tremblay, 1997; Caspi, Moffitt, Newman, & Silva, 1996). The presence of these markers suggests that risk for alcoholism was manifested early in life, despite the distanced consequences (i.e., alcoholism diagnosis in adulthood). In addition, these early markers may also indicate that primary intervention (i.e., before the offspring meets criteria for alcoholism) was necessitated to counter the sustained risk (Maguin, Fitzgerald, & Zucker, 1995; Zucker & Wong, 2005).

In addition, correlates of the disorder such as lower socioeconomic status (Zucker, Ellis, Bingham, & Fitzgerald, 1996), lower intellectual abilities of parents and children (Poon, Ellis, Fitzgerald, & Zucker, 2000), additional psychiatric diagnoses in one or both parents (Brannen, Hammen, Katz, & Le Brocque) especially anti-social personality disorder (Zucker et al., 1996), assortive mating among alcoholics (Olmsted, Crowell, & Waters, 2003), and more conflictual family environment and parent-child interactions (Barnes, Reifman, Farrell, & Dintcheff, 2000; Sanford, Bingham, & Zucker, 1999; Whipple, Fitzgerald, & Zucker, 1995) interact with parental alcoholism to increase COAs' level of risk for problematic outcomes (Ellis, Fitzgerald, & Zucker, 1997; Hawkins, Catalano, & Miller, 1992). These risk factors interact to create an increasingly maladaptive and unstable family environment in which children are raised. This developmental risk aggregation model has been supported by the literature (Fitzgerald, Davies, & Zucker, 2002; Fitzgerald, 2002; Zucker, Fitzgerald, Refior, Puttler, Pallas, & Ellis, 2000).

Findings from the Michigan Longitudinal Study (MLS) provide a detailed perspective of the differences within alcoholic families, as well as between alcoholic and non-alcoholic families. Zucker et al. (1996) identified significant differences in parent and child variables across antisocial alcoholics (AALs), nonantisocial alcoholics (NAALs) and controls. AAL parents had more relatives who were alcoholic, reported greater levels of comorbid psychopathology (depression and antisocial behavior), and scored lower on measures of SES and intellectual functioning.

Early findings have shown significant differences between at-risk and control groups in internalizing, externalizing and aggressive behavior in preschool aged boys (Zucker & Fitzgerald, 1991). Male children from these families exhibited significantly greater levels of both externalizing and internalizing problems. Nearly identical findings were published by Edwards, Leonard, and Eiden (2001) and Edwards, Eiden Colder, and Leonard (2006).

Beyond fathers' alcoholism and antisocial behavior, fathers' depression and mothers' psychopathology contribute to COAs' problem behaviors. Loukas, Fitzgerald, Zucker, and von Eye (2001) found that fathers' depression was indirectly predictive of externalizing behavior via family conflict and children's inability to self-regulate. Fitzgerald et al. (1993) found that mothers' depression and alcohol use were significantly related to their sons' externalizing behavior problems, such that increases in maternal psychopathology predicted increases in child behavior problems.

Parent-focused factors are not sole risks that COAs experience, as child-focused factors have been shown to be associated with increased risk for alcoholism. Temperament characteristics have been found to be significantly related to problem behaviors and risk for future alcoholism (Fitzgerald, Davies, et al., 2002). Mun, Fitzgerald, Von Eye, Puttler, and Zucker (2001) showed evidence that paternal alcoholism was indirectly related to maladaptive early childhood behavior outcomes, such that male COAs with more difficult temperament characteristics had higher levels of externalizing behavior. Similarly, Loukas and colleagues (Loukas, Zucker, Fitzgerald, & Krull, 2003; Loukas, Fitzgerald, Zucker, & von Eye, 2001) have shown that preschool male COAs' inability to regulate behavior and mood is prospectively predictive of slower rates of reduction in externalizing behavior during the early school years.

In addition, the presence of parental ASPD, while positively and directly related to problem behavior, may also function as a *moderator* of outcome. For example, Wong and colleagues (1999) found that the prospective relationship between child temperament and externalizing behaviors was moderated by parent psychopathology, such that in the context of high parent psychopathology, child temperament predicted increased externalizing behavior. However, their operationalization of parental psychopathology was a composite variable of both alcoholism and ASPD, and the role of parent ASPD as a singular moderator was not examined.

Collectively, these findings show significant evidence that parental alcoholism, ASPD, and depression are predictive of greater initial levels of behavior problems and delayed reductions of problem behaviors in children. COAs, particularly those from AAL households, enter into adolescence with a history of poorer outcomes in numerous areas.

Externalizing behavior as an intermediary risk factor

Adolescence represents a unique time of developing autonomy and identity, with youth experimenting with different attitudes, beliefs, and behaviors than those of their parents (Arnett, 1999; Newcomb & Bentler, 1989). Though adolescents in general are at heightened risk for engaging in problematic, risky behavior patterns (Jessor & Jessor, 1977; Newcomb & Bentler, 1989; Moffitt, 1993), this transitional period may present a different challenge for adolescents reared by parents diagnosed with alcoholism, whose manifestations of their risk may develop from temperament characteristics during early childhood into alcohol use and deviant or externalizing (e.g., aggression and delinquency) behaviors during adolescence. Recent findings using COA samples show this to be the case: using data from the MLS, Zucker, Wong, Puttler, and Fitzgerald (2003) found that vulnerable children, as defined by high levels of parental psychopathology as well as high levels of problem behaviors during preschool, showed significantly more aggression and delinquency than similarly aged peers during adolescence.

Research on the effects of parental psychopathology on adolescent externalizing behavior and alcohol use has shown similar findings. Chassin, Rogosch, and Barrera (1991) identified parental alcoholism, antisocial behavior and depression as significant predictors of externalized problem behaviors in a sample of adolescent COAs. In comparison to adolescents without alcoholic parents, adolescents with alcoholic parents were significantly more likely to show clinically significant levels of both internalizing (e.g., anxiety and depression) and externalizing behaviors. Indirect effects of parental psychopathology have also been documented in the literature. For example, premature emotional separation and greater family conflict, characteristic in alcoholic households

(Sanford et al., 1999), predicted increased adolescent alcohol use (Bray, Adams, Getz, & Baer, 2001). Barnes et al. (2000), using a community sample of adolescents, found that parental alcohol abuse predicted decreased quality of parenting (i.e., less supportive), which in conjunction with amount of monitoring, was related to greater levels of initial alcohol use and greater increases in use.

Other work has shown evidence for the relationship between problem behaviors in the context of parental psychopathology. Hussong, Curran, and Chassin (1998) found that both parental alcoholism and antisocial personality disorder were positively related to heavy initial alcohol use and increased level of use in a sample of adolescent COAs. The relationship between parental variables and initial use was significantly mediated by externalizing behavior in both males and females, but the mediation effect between parent variables and level of use was only significant for male adolescents.

In other words, although alcoholism and antisocial behavior predicted the initial level of alcohol use, the strength of this relationship was carried by *externalizing behavior* for both males and females. For males, externalizing behavior carried the relationship between parental variables and increased alcohol use. Similar findings were presented by Chassin, Pitts, Delucia, and Todd (1999) who investigated the effects of parental psychopathology on substance use outcomes in their young adult children. Parental psychopathology (i.e., alcoholism and antisocial personality disorder) were significantly predictive of greater likelihood of alcohol and drug abuse. Furthermore, these relationships were mediated by the young adults' externalizing behavior, such that externalizing behavior predicted greater likelihood of alcohol problems in the context of parental psychopathology.

These results suggest that COAs' risk for problematic outcomes was compounded by externalizing behavior, above and beyond specific genetic and environmental risk factors for alcoholism. These findings support the "problem behavior syndrome" (Jessor & Jessor, 1977). It follows that COAs who exhibit greater than average externalizing behavior, will engage in underage drinking (one deviant activity) which is more likely to occur given their risk status (Alford, Jouriles, & Jackson, 1991; Sher, 1991), and then will be more likely to engage in other similar activities (e.g., shoplifting, breaking and entering, truancy). Moreover, early alcohol use and alcohol problems during adolescence was associated with greater concurrent and future levels of delinquent behavior and increased risk of future alcoholism (Prescott & Kendler, 1999). In addition, numerous researchers have identified early onset of alcohol consumption as one predictor of a subtype of alcoholism characterized as chronic and recalcitrant, by greater density of familial alcoholism, greater problems associated with alcoholism, and antisocial behavior (Webb, Baer, Caid, McLaughlin, & McKelvey, 1991; Type A/ Type B, Babor et al., 1992; Type 1/ Type 2, Cloninger, 1987; NAAL/ AAL, Zucker, 1994; Zucker, Elllis, Fitzgerald, Bingham, & Sanford, 1996).

"Antisocial alcoholics" (AALs) have been shown to differ significantly from both non-antisocial alcoholics and control samples (Sanford et al., 1999; Zucker, Ellis et al., 1996). Moreover, there is evidence that the presence of severe parental antisocial behavior and/ or clinically diagnosable ASPD is predictive of greater levels of COA problem behavior, especially externalizing behavior. Parental ASPD has been shown to impact distal adolescent outcomes via paternal supervision and deviant peer relationships, such that ASPD is predictive of less supervision, which in turn is related to more

substance using peers, and subsequently related to greater levels and higher rates of adolescent substance use (Loukas et al., 2003). From another perspective, these typological differences also indicate that antisociality may moderate the effect of parental alcoholism on child outcomes, such that AAL COAs may be especially prone to manifest a "problem behavior syndrome", but the extent to which parental ASPD plays a moderator role has not been fully explored in the COA literature.

Since family history of parental substance abuse and psychopathology were not controlled for in Hirschi's (1969) or Jessor and Jessor's (1977) research, it is impossible to say whether the relationships found in their samples provide an accurate picture of the same relationships in an at-risk sample. However, it follows that, since alcoholic parents are more likely to accept and model irresponsible and/ or delinquent behavior (Ellis et al., 1997), this relationship is conceivably accentuated in adolescent COAs, particularly AAL COAs. The applicability of these results from a community sample to an alcoholic sample, while not yet explicitly addressed, likely signifies increased trouble in selecting healthy peer relationships.

Peer relationships as a risk factor

Peer relationships, which gain significance over parental relationships during adolescence (Steinberg & Silverberg, 1986), are noted by numerous theorists (Hirschi, 1969; Jessor & Jessor, 1977; Oetting & Beauvais, 1987) as another risk factor for adolescents in general, but particularly for COAs. Though peers can provide a supportive, mutual relationship, the pressure to "fit in" can create risks for adolescents. Research has shown a substantial amount of evidence for this assumption: O'Brien and Bierman (1988)

found that peer influence on adolescent attitudes and behavior steadily and significantly increased from preadolescence (10-12 years) to late adolescence (16-17 years).

This increasing important aspect of adolescence can create a social atmosphere that accepts or abhors delinquency and alcohol and drug use. Oetting and Beauvais (1987), basing their analyses on peer cluster theory (Oetting & Beauvais, 1986), investigated the influence of peer groups on adolescent substance use. Peer cluster theory stipulates that alcohol and drug use are a function of the peer group chosen by adolescents, who develop the regulations around the propriety of use. The process of selecting a particular peer group was influenced by personality, non-peer social influences, and cognitive factors.

Using a community sample of high school upperclassmen, they used path analysis to examine the relationships between drug using peers, religiosity, family and school variables, and family adolescent drug use. They found that peer relationships mediated the relationship between parental influence, adolescent religiosity, and adolescent drug use, such that parental influence was positively related to religiosity, which was negatively related to drug using peers. Relationships with drug using peers were positively associated with adolescent drug use.

Thus, relationships with parents, both directly and indirectly, can affect the nature of peer relationships, potentially putting adolescents at further risk for problem behavior. Fuligni and Eccles (1993), using a community sample of young adolescents, found that adolescents who perceived their relationships with parents as constrictive or authoritarian were more likely to adopt peers' behavior patterns. Thus, adolescents in alcoholic

families whose parents are more likely to exhibit these characteristics (Windle, 1996) are at higher risk of adopting the behavior styles of peers.

This "mirroring" of peer behavior is not necessarily problematic; indeed, if youth are exposed to prosocial peers, such mimicking may decrease involvement in delinquent behavior. However, if a chosen peer group defines itself by engaging in delinquent behavior, adolescents, especially COAs, are then confronted with another level of risk. Research has shown that the peers chosen by COAs are more likely to interact with peers who engage in deviant behaviors, such as alcohol use, cigarette use, illicit drug use, delinquent activity and sexual activity (Blackstone & Tarter, 1994; Fergusson & Horwood, 1999).

Curran, Stice, and Chassin (1997) found that adolescent and peer alcohol use were reciprocally related, such that adolescent alcohol use positively and prospectively predicted peer use and vice versa. Marshal and Chassin (2000), using a sample of COAs and matched controls, found that adolescent alcohol use was significantly and positively predicted by involvement with peers who use alcohol. Similar results were found by Fuzhong, Barrera, Hops, and Fisher (2002). In addition, Windle (2000) and Mason and Windle (2001) found that peer alcohol use was a significant predictor of adolescent alcohol consumption. Furthermore, the influence of peer use was stronger than the influence of parent alcohol use, supporting the notion that during adolescence, peers supersede parents in relative strength of influence on adolescent decision making and behavior with respect to drinking (Windle, 2000).

Beyond the direct effect of alcohol-using peers, other findings have found peer relationships to mediate the relationship between parental alcoholism and adolescent

alcohol use via the adolescents' peer affiliation choices. Chassin, Pillow, Curran, Molina, and Barrera (1993) found that the positive relationships between parental alcoholism and antisocial personality and adolescent substance use were significantly mediated by substance-using peer groups and parental monitoring. In their study, alcoholism predicted reductions in parent monitoring, which subsequently predicted increased associations with peers who abuse substances. Involvement with these peers positively predicted adolescent substance abuse. Similar results have been replicated in the MLS (see Loukas et al., 2003)

In addition, deviant behaviors during adolescence, which are more frequently exhibited by COAs (Chassin et al., 1991), are themselves predictive of adverse future outcomes, including continued perpetration of delinquency (Kazdin, 1987). Although deviant behaviors are relatively normative for this age group (Moffit, 1993), a distinction was made between those adolescents whose deviant activities are confined to adolescence (adolescent-limited offenders) and for those whose deviant activities continue into adulthood (life-course persistent offenders). Whereas the adolescent-limited offenders' acting out was seen as a symptom of a maturity gap experienced during adolescence and was considered normal, life-course persistent offenders' behavior was seen as characterologically, as opposed to developmentally, triggered (Moffitt, 1993). As lifecourse persistent offenders tend to begin their deviant behaviors at younger ages and commit more severe and frequent offenses than adolescent-limited offenders, their behavior constitutes a prerequisite for, and thus may be indicative of, future ASPD. It can be inferred that beyond being at greater risk for normal levels of offending, COAs

(particularly those from antisocial alcoholic homes) are at greater risk for becoming lifecourse persistent offenders and more severe outcomes such as ASPD.

Cumulatively, this literature highlights a number of points. First, parental alcoholism and comorbid psychopathology, particularly depression and antisocial personality disorder, constitute significant risk factors for normal development. Second, COAs appear to be at higher risk for problems involving externalizing behavior and alcohol use, which in part characterize the problem behavior syndrome (Jessor & Jessor, 1977) and is predictive of continued problems later in life (Moffitt, 1993).

Furthermore, there is some evidence that adolescents from AAL homes may be at greater risk (and whose behavior may be less amenable to change) for negative outcomes than NAAL adolescents. Lastly, these adolescents are more likely to associate with peer groups who encourage and engage in similar behavior patterns, which can further perpetuate the behavior in both groups. However, despite the strength of these findings and the pervasiveness of these disorders in the population, there was little published research on the effects of protective factors within these samples.

Protective qualities of religion

In the past decade, researchers have identified religion as a substantial protective factor against adverse outcomes in adult and adolescent samples. Researchers have found there to be a negative relationship between reports of religiosity and depression (Koenig et al., 1992; Koenig, George, & Petersen, 1998) and physical health (Powell, Shahabi, & Thoresen, 2003). Ellison, Boardman, Williams, and Jackson (2001) found that religious involvement was significantly and consistently predictive of increased life satisfaction and decreased feelings of distress.

In addition, research on religiosity as a protective factor in alcoholic adult samples has shown promising results. Religiosity was a fundamental aspect of Alcoholics Anonymous' (AA) 12 Step model, one of the most pervasive alcoholism rehabilitation programs in the United States (Kaskutas, Turk, Bond, & Weisner, 2003). While one isn't required to be religiously affiliated in order to benefit from AA, research has shown that religiously affiliated individuals are more likely to attend meetings and maintain recovery (Tonigan, Miller, & Schermer, 2002)

Although this attention to religion in adult and elderly samples has proven productive, the influence of religiosity on the mental health of children and adolescents has been relatively neglected in the literature (Donelson, 1999; Martin, Kirkcaldy, & Siefen, 2003), specifically that which concern children and adolescents in high-risk environments. This lack of research has persisted despite data which suggest that more than half of United States adolescents identify religion as important and attend religious services at least monthly (Wallace, Forman, Caldwell, & Willis, 2003). Seminal research has highlighted religiosity at various levels as protective against poor outcomes (Hirschi, 1969; Jessor & Jessor, 1977).

Religiosity, whether in adolescent or adult samples, is widely considered a multidimensional construct (Fetzer Institute, 2003), despite the majority of the field continuing to use individual items to measure participants' religiosity. Nevertheless, it is a difficult construct to define. The definition put forth by Hill and Hood (1999) nicely and broadly summarizes it: "phenomena that include some relevance to traditional institutionalized searches to acknowledge and maintain some relationship with the transcendent (pg. 5)." Such a definition is expansive enough to include a wide range of

behaviors, beliefs, and attitudes about religion, while maintaining some distinction from similar concepts (e.g., spirituality).

Research using adolescent samples suggests that religiosity has a substantial impact on numerous behavior outcomes, including promoting a sense of responsibility and competence (Gunnoe, Hetherington, & Reiss, 1999; Brody, Stoneman, & Flor, 1996) and delaying adolescent sexual activity (Rostosky, Wilcox, Wright, & Randall, 2004; Hardy & Raffaelli, 2003) However, researchers have recently begun to focus on the relationship between religiosity and behaviors characteristic of the "problem behavior syndrome," such as alcohol/ drug use, problems associated with such use, and delinquency.

Conceptualizing religiosity as a proxy measure for conventionality, Jessor and Jessor (1977) found that adolescents with higher scores on religiosity were significantly less likely to engage in delinquent activities. Similarly, Oetting & Beauvais (1987) found religiosity to be negatively related to adolescent substance use. More recently several measures of religiosity, notably attendance and fundamentalism, were identified as directly and negatively related to both alcohol and problematic alcohol use (Brown, Parks, Zimmerman, & Phillips, 2001). Although Brown et al.'s study demonstrated an inverse relationship between religiosity and substance use, family history of alcoholism was not assessed, and thus the degree to which these adolescents were at increased risk for problem drinking is unknown. In addition, the cross-sectional design did not include measures of peer religiosity or peer drinking behavior, despite their practical significance in the lives of adolescents.

Hodge, Cardenas, and Montoya (2001), with a sample of school-recruited, primarily Latino students, found that religious adolescents were significantly less likely to have reported using alcohol. However, this finding did not generalize to other substances. This finding was discussed in regards to the relativity of religiosity as a protective factor. Although religiosity may play a significant role during the start of a substance-using career (i.e., with alcohol use), its effects may be drowned out by greater involvement with more illicit substances and affiliated peer groups (Hodge et al., 2001). Although these results are informative for a general sample of adolescents, the lack of attention to parental alcoholism reduces its applicability to at-risk samples.

Three studies have attempted to show an inverse relationship between religiosity and adolescent alcohol use using longitudinal data. With a sample of middle and high school students, Wills, Yaeger, and Sandy (2003), explored the degree to which religiosity played a mediating role in the relationship of distress and substance use. Among their findings, their results showed a negative relationship between religiosity and alcohol and drug use. Additional analyses demonstrated an interaction between religiosity and life events, such that as stressful events increased, more religious participants (versus less religious) reported less substance use.

They also explored the data longitudinally with latent growth curve modeling. They proceeded with a multiple-group analysis after dividing the sample into high and low religiosity groups based on 7th grade religiosity data. Significant differences in the paths from life stress and alcohol and drug use were found between the two groups. Adolescents who were identified as very religious showed lower initial alcohol and drug

use and lower rate of growth in use over time, in comparison to adolescents identified as less religious.

Mason and Windle (2001; 2002) utilized data from a school-recruited sample that collected data over a two year period. Using structural equation modeling (SEM), they demonstrated a negative relationship between religiosity and alcohol use. In addition, peer alcohol use was significantly and positively related to adolescent alcohol use one year later. Supporting results were found in additional analyses (Mason & Windle, 2002). Although youths' attendance was the most consistent predictor of the inverse relationship, the most significant predictor of adolescent alcohol use was peer alcohol use, above and beyond the effect of religiosity.

Although these studies inform the literature in regards to the protective nature of religiosity and the function of alcohol using peer groups during adolescence, they were not without limitations. Perhaps the greatest weakness in the studies that examined the protective qualities of religiosity in adolescent alcohol use, however, was the lack of attention to the presence or absence of parental alcoholism. Although recruitment of adolescents from school districts allows for large sample sizes, these results can not be generalized to adolescents who are at heightened risk for alcoholism on multiple levels.

In addition to alcohol use and abuse, religiosity has also been shown to be a protective factor in delinquency research, another aspect of the "problem behavior syndrome." Litchfield, Thomas and Li (1997) found that religiosity showed a prospective buffering effect on deviant behavior in a Mormon sample, though the relationship was mediated by the extent to which adolescents had served on a church mission (a

requirement of their faith). However, the extent to which these results from an extremely devout adolescent can be generalized to other denominations was questionable.

Regnerus (2003) explored the effects of parental and adolescent religiosity on adolescent delinquency using a nationally representative sample of adolescents 11 through 17 years old. He explored both parent and self report of religiosity on adolescent delinquency. Interestingly, despite both reports being significantly predictive, self-report was more consistent in its relationship with delinquent behavior. Moreover, the inverse relationship increased in strength over time.

One particularly innovative study (Johnson, Jang, Larson, & Li, 2001) investigated the relationship between religiosity, peers and deviant behavior over time in a nationally representative adolescent sample. Johnson and colleagues tested the prospective relationships between adolescent religiosity and delinquency and peer delinquency over three waves of data. As hypothesized, religiosity predicted reductions in delinquency as well as delinquent peer relationships.

Limitations of the literature

Despite encouraging findings and growth of adolescent religiosity research, this area of research was complicated by a number of factors. Adolescents, even with their developing autonomy, rely on their parents to formally introduce religious concepts and create opportunities for religious participation (Martin, White, & Perlman, 2003). Research designs involving younger populations frequently utilize parents' (usually mothers') report of religiosity in proxy of a direct report from the younger participants (e.g., Brody et al., 1996; Gunnoe et al., 1999; Foshee & Hollinger, 1996). Although this type of data is useful in describing the relative *parental or familial* emphasis on religion
in the family, it neglects the adolescent's developing opinion and internalization of religiosity. To date, only one study (Regnerus, 2003) has included both parents' and adolescents' reports of religiosity, which constitutes a substantial gap in the literature. In addition, many of the available studies have methodological flaws, including lack of significance tests and sole reliance on cross-sectional designs, which detract from the generalizability of the results.

Another weakness of the religiosity literature is the lack of attention to religious peers. Given the developmental tasks of individuation during adolescence, peers and significant others become powerful figures in adolescents' lives (Steinberg & Silverberg, 1986), particularly regarding religious activities (Smith, 2003). Peers who participate in religiously affiliated activities, such as youth groups and religious education, may influence similarly aged youngsters to do the same (Smith, 2003). As opposed to deviant peers, these peers encourage prosocial behaviors and may theoretically mediate the effects of parental psychopathology. However, the extent to which peer religiosity functions as a protective factor has not been addressed in the empirical literature. In an effort to address this gap, data available for this research includes peer religiosity variables.

Another significant gap in the literature is the lack of at-risk samples. Only one study in the referenced literature on alcohol and delinquent behaviors included an at-risk sample and it utilized children and opiate-addicted parents who were recruited from a treatment clinic (Miller, Weissman, Gur, & Adams, 2001). Thus, the extent to which religiosity functions as a protective factor in COAs who have not necessarily been identified as been "at-risk" is unknown. Related findings suggest that there may be

differences between alcoholic and nonalcoholic samples in religiosity. Sanford et al. (1999) found that both AAL and NAAL families scored significantly below control families on the Moral/ Religious scale. In other words, parents in alcoholic families, in comparison to control families with no alcoholism, reported that they emphasized moral and religious values to a lesser extent. This may imply that religion may not be as strongly evidenced in adolescent COAs, but definitive conclusions can not be made until this gap is addressed.

Moreover, there is a paucity of longitudinal research on the relationship between religiosity and adverse outcomes. In two of the three published longitudinal studies of adolescent alcohol use, Mason and Windle (2001; 2002) utilized bi-annual data collected over a two year period, limiting the longitudinal nature of the research. In addition, changes in their assessment battery during data collection weakened their design. Although Wills et al. (2003) used four waves of annually collected data, their sample of school-recruited young adolescents can not be generalized to adolescent COAs. Longitudinal delinquency studies by Litchfield et al. (2001) and Regnerus (2003) showed similar weaknesses in their reliance on two waves of data. Results from Johnson and colleagues (2001) showed support for the buffering role of religion with three waves of data, though it was unclear as to the time span between waves. In addition, their sample did not account for family history of antisocial behavior or alcoholism, which both may contribute to adolescent deviant behavior. Their data analysis explored the strength and valence of their model, but did not address potential questions regarding the initial level of delinquent activity, nor its trajectory over time. The question remains, however, as to

whether religiosity affects the initiation and trajectory of adolescent alcohol use and deviant behavior in *at-risk samples* over time.

In conclusion, there are numerous reasons for increased research on resilience in COAs. For developmentally specific reasons such as cognitive level and need for adult guidance, research results from adult samples should not be generalized to younger samples. In addition, research endeavors utilizing adolescent samples have the added burden of assessing multiple sources of religious influence in order to most accurately gauge adolescents' religious life. Perhaps the most glaring absences in the literature are (a) the lack of attention to parental psychopathology in studies of religiosity and adolescent problem behavior, (b) the integration of parent, adolescent, and peer religious data in previous research, and (c) the minimal use of longitudinal data in religiosity research.

HYPOTHESES

Based on the preceding literature review, the following hypotheses are proposed:

Hypothesis 1: Parental psychopathology [i.e., alcoholism, antisocial behavior, and depression] will predict increases in adolescent externalizing behavior.

Hypothesis 2a: Parent-reported religiosity will be negatively related to adolescent externalizing behavior.

Hypothesis 2b: Adolescent-reported religiosity will be negatively related to the adolescent externalizing behavior.

Hypothesis 3: Deviant peer relationships will be positively related to adolescent externalizing behavior.

Hypothesis 4: Adolescent externalizing behavior will be related to greater levels of and rate of change in adolescent deviant behavior (i.e., alcohol use, related problems, and delinquency).

Hypothesis 5: For adolescents with parents diagnosed with *both* alcoholism and antisocial personality disorder (ASPD), the relationship between externalizing behavior, and the initial level and rate of change of deviant behaviors will be stronger than those of the adolescent from non-comorbid families.

METHOD

Participants

This research utilized *previously collected data* from the Michigan Longitudinal Study (MLS). The MLS, with the broad aim of investigating the etiology of alcoholism, has followed a sample of 323 Caucasian families from the Mid-Michigan area over the past 20 years. Ethnic minorities were excluded from participation because census data indicated that they accounted for approximately four percent of the recruitment area population, and the available funding did not allow for a sufficient sample size to study inter-ethnic differences or within-ethnic etiology. On average, the sample was blue-collar working class (Zucker, Fitzgerald, et al., 2000).

The MLS recruited families with alcoholic fathers and initially focused on male children due to funding constraints. Inclusion criteria into the study involved both parent and child variables. Recruitment for alcoholic families was based on DWI convictions in Mid-Michigan courts. Fathers who had a BAC of .15 during their first offense or .12 during subsequent alcohol-related offenses were initially contacted for study participation (N=159). This alcoholic group required the father in each family to have an alcoholism diagnosis as designated by the SMAST, Feighner's Research Criteria (Feighner et al., 1972), and DSM-III-R criteria (APA, 1987). Maternal diagnosis was free to vary in this at-risk sample. In addition, both parents were required to be married and to be the biological parents of the male target child (MTC) between the ages of 3 and 6 years old. Children who exhibited characteristics of fetal alcohol syndrome (FAS) were excluded from participation (Fitzgerald et al., 1993).

In order to make stronger conclusions that the study results were a function of

parental alcoholism, a group of control families was also included in the study (N=91). These control families were recruited from the same neighborhoods as and matched to the alcoholic families. Inclusion criteria required that neither parent had ever met criteria for an alcohol use disorder. As with the alcoholic sample, these participants were required to be currently married and the biological parents of a son between the ages of 3 and 6 years old. Complete details of the study design and recruited samples are provided in Zucker et al. (2000).

Neighborhood canvassing also revealed families in which the father or mother had previously or currently met criteria for alcoholism. These newly-discovered alcoholic families were included in the study as a community dwelling (not court-involved) alcoholic sample (N=61). Similar to the court-involved sample, the mother's diagnosis was free to vary in this sample. Inclusion criteria for this sample also required that both parents be currently married and the biological parents of a son between the ages of 3-6 years old. As with the court-recruited alcoholic sample, children with FAS were excluded. At subsequent waves, female target children (FTCs) and available siblings within 6 years of the MTC were included in data collection, in order to increase generalizability and power of statistical analyses.

Data Collection

After the initial data collection (Time 1), follow-up data collection was completed every 3 years (abbreviated T2, T3, T4, T5) with all involved participants. In addition, annual data collection (termed Annuals, abbreviated "A") for adolescents aged 11 through 17 was incorporated. Annuals include an abbreviated battery of self-report measures that allow for more detailed and thorough understanding of the changes and

experiences during adolescence. For the proposed analyses, parent and adolescent data from T4 (youth aged 12-14 years), T5 (youth aged 15-17 years) and A3 through A7 (youth aged 13-17 years) were used. Although T4 includes 12 year olds, these data were excluded to maintain an exclusive focus on the "teen" adolescent years.

Measures

Parental Measures

Alcoholism Diagnosis. Lifetime and current parent alcoholism diagnoses were given on the basis of responses to the Diagnostic Interview Schedule (DIS), Drinking and Drug History Questionnaire, and the Short Michigan Alcoholism Screening Test (SMAST). The DIS was a thorough, guided interview that covers mental and physical health information, including alcohol and drug information. The most recent version of this instrument available was used at each wave. The Drinking and Drug History Questionnaire uses various items from three well validated measures of alcohol and drug use: 1978 National Institute of Drugs Abuse (NIDA) Survey (Johnston, Bachman, & O'Malley, 1979), the American Drinking Practices Survey (Cahalan, Cisson, & Crossley, 1966), and the Research Questionnaire for Alcoholics (Schuckit, 1978).

A trained clinician made diagnoses using Diagnostic and Statistic Manual, Fourth Edition (DSM-IV) criteria for each parent's alcohol use. Lifetime diagnoses were made at T1 to identify adults who met criteria for an alcoholism diagnosis at an earlier point in their life but did not currently meet criteria, providing a rough measure of developmentally limited alcoholism. Current diagnoses were made for adults' alcohol use during the last year as well as the last 3 years. Diagnoses ranged from 0 (No Diagnosis) to 4 (Alcohol Dependence, With Physical Dependence). At T1, 58.2 % of fathers and

18.2% of mothers met criteria for an alcohol use disoder (AUD).

Antisocial Personality Disorder. A lifetime antisocial personality diagnosis (ASPD) for each parent was determined on the basis of information gathered at T1, and level of antisocial involvement was measured at subsequent waves. ASPD diagnoses were made by a trained clinician on the basis of information from the DIS-IV (Robbins, Helzer, Croughn, & Ratcliffe, 1980) and supplemented by the Antisocial Behavior Checklist (ASBCL; Zucker & Noll, 1980). The ASBCL, which covers both child- and adulthood antisocial behaviors at T1, was a 46 item measure originally developed through the Rutgers community Study (Zucker & Barron, 1973). This measure is sensitive to changes in antisocial behavior that are a function of development (e.g., bullying other children versus defaulting on debt), and can discriminate between normative and clinical levels of antisocial behavior. Previous work (Zucker, Noll, Ham, Fitzgerald, & Sullivan, 1994) has shown that the measure's validity, test-retest reliability and Cronbach's alpha are excellent (.91 and .93, respectively). For this study, antisocial behavior was dichotomously scored 0 (no diagnosis) and 1 (lifetime ASPD). Seventy-six parents (20.9%, 65 men; 3.5%, 11 women) met criteria for ASPD.

In addition, this instrument was used to measure current levels of adult antisocial behavior at subsequent waves, based on the previous 3 years. A total adult antisocial behavior index was determined by summing all adult items for an overall score. Women's average antisocial score (X = 6.3, SD = 4.1) was significantly lower than the men's antisocial score (X = 10.9, SD = 7.5, p < .001)

Hamilton Rating Scale for Depression. The current depression scores from the Hamilton Rating Scale for Depression (HRSD; Hamilton, 1960) was used as an indicator of current as well as past parent depressive symptoms. This scale was completed by a trained clinician after the DIS administration. At each wave, clinicians determine depression scores based in part on each parent's symptom report as well as their clinical impression of the individual's symptomatology. Current depression scores are based on symptom reports over the past year. Interrater reliabilities have been found to be acceptable in the current study (.78 for current depression; Reider, 1991). In the present study, T1 current depression scores for mothers ranged from 0 to 34, with a mean of 5.7 (SD = 6.4), and for fathers from 0 to 48, with a mean of 4.7 (SD = 5.9). These scores were significantly different (t = 2.5, p < .05)

Demographic questionnaire. Three items were taken from the Demographic Questionnaire to gauge parents' religiosity. Each parent identified their religious denomination from 38 choices, or alternatively filled in their denomination if it wasn't listed. This was then recoded into level of fundamentalism, from 0 (not fundamental/ no religion) to 3 (very fundamentalist), according to Smith's (1987) typology. They rated their degree of religiousness on a scale of 1 (not at all religious) to 4 (very religious). Finally, parents rated how frequently they attended religious services on a scale of 1 (several times a week) to 5 (once a year). This item was reverse coded for data analysis purposes. These items were used separately as indicators of parental religiosity.

Moos Family Environment Scale. The Moos Family Environment Scale (Moos & Moos, 1974) is a well-validated and widely used measure of family interaction quality. For the purposes of this study, the eight items from Morality/ Religious subscale of the FES were used as indicators of parental religiosity. These items were dichotomously coded as False (0) or True (1). An example item is "The Bible [Torah, Koran] was an

important book in our family." These items were summed by parent and included as an indicator of the latent parental religiosity variable.

Ways of Coping Interview- Revised. The Ways of Coping Interview- Revised is a 68 item interview used to identify adult participants' means of coping with stressful life events. Individuals were interviewed regarding the details of a stressful event that occurred, and were then asked whether, and if yes, how frequently, they used various means of coping. Vitaliano and colleagues (1985) found acceptable alphas ranging from . 73 to .88 across various samples. The two items used as indicators of religious coping in the present study were "prayed" and "found new faith." Item scores ranged from 0 (not used) to 3 (used frequently). These items were summed by parent, and were used as two additional indicators of parental religiosity.

Adolescent Measures

Demographic Questionnaire. Similar to the parent variables, three items were taken from the demographic questionnaire to measure adolescent-report religiosity. Adolescents identified their religious denomination from among 38 choices, and also had the option to fill in another denomination. These variables was recoded according to level of denomination fundamentalism in the same way as the parent variables (Smith, 1987). Adolescents then rated how religious they were, on a scale of 1 (not at all religious) to 4 (very religious). In addition, participants reported how frequently they attended religious services on a scale of 1 to 5. This item was reverse coded. These items were used individually as indicators of the latent adolescent religiosity variable.

Moos Family Environment Scale. The Moos Family Environment Scale (Moos & Moos, 1974) is a well-validated and widely used measure of family interaction quality.

For the purposes of this study, the eight items from Morality/ Religious subscale of the FES were used as indicators of parental religiosity. These items were dichotomously coded as False (0) or True (1). An example item is "The Bible [Torah, Koran] was an important book in our family." These items were summed and included as an indicator of the latent adolescent religiosity variable.

Peer Behavior Profile. The Peer Behavior Profile was a 54 item self report questionnaire that was developed by MLS project staff. It was used as a measure of different domains of adolescent peer relationships, roughly guided by the Jessors'(1977) and Hirschi's (1969) theories. Scale scores were computed for individual peer domains. Reliability and validity for these scales were found to be adequate (Petersen, Schulenberg, Abramowitz, Offer, & Jarcho, 1984).

For the current study, three items from the Peer Behavior Profile were used as indicators for adolescent religiosity: how many friends attend services at least once a month/ once a week, and how many friends belong to church sponsored groups. For each item, adolescents were asked to rate how many of their friends engaged in each activity: 0 (Almost none) to 6 (Almost all). These 3 variables were used as indicators of the adolescent religiosity latent variable.

In addition to measuring religious peer activity, it was used to measure peer delinquency. For the latent deviant peer group variable, twenty-eight items from the Peer Behavior Profile were available as indicators. Items ask how many of the adolescent's friends have engaged in various activities. Examples include "have sexual intercourse," "write graffiti," and "destroy others' property." For each item, adolescents were asked to rate how many of their friends engaged in each activity: 0 (Almost none) to 6 (Almost

all).

Child Behavior Checklist Youth Self Report. The Child Behavior Checklist Youth Self Report (CBCL-YSR; Achenbach, 1991) is a well-validated and widely used 112 item measure of internalizing and externalizing psychopathology. Older children and adolescents report on the frequency with which they experience or engage in different thoughts, feelings, and behaviors. Individual items are scored 0 (never/ not true), 1 (occasionally/ sometimes true), and 2 (often/ always true). Broad Band (Internalizing, Externalizing, and Total Problems) and Narrow Band (Withdrawn/ Anxious, Somatic, Social Problems, Delinquency, Aggression, Thought Disorder, Attention Problems) indices of functioning are provided in the form of T-scores. These scores provide information whether reported symptomatology falls in the subclinical, borderline or clinical range of behavior, in comparison to a large sample of adolescents from both clinical and non-clinical settings. Individual scales were developed using principal components analysis with varimax rotation (see Achenbach, 1991, pg. 27, for details pertaining to scale and syndrome derivation). The CBCL-YSR has shown adequate reliability and validity in validation studies. One week test-retest reliability for the Delinquency scale has been shown to be adequate (r = .72), and clinic-referred adolescents differ from non-referred adolescents on mean Delinquency scale scores (Achenbach, 1991). For the purposes of this study, parent and adolescent report of externalizing behavior werebe tested to examine which functions best as an indicator. Since Achenbach (1991) identified age as a significant confound associated with Delinquency scale scores, such that older adolescents rather than younger adolescents reported greater levels of delinquent behavior, adolescent age will be covaried in the

analyses.

Antisocial Behavior Checklist. The Antisocial Behavior Checklist-Revised (ASB-R; Zucker & Noll, 1980) is a 62 item measure of adolescent antisocial activity. Participants indicate how frequently in the previous year they engaged in various delinquent activities. Each item score ranges from 0 (Never) to 4 (Often). Example items include vandalizing property, setting fires and bullying others. All items are summed to provide a total antisocial behavior score. Reliability for the ASB-R has been found to be acceptable for research purposes (α s ? .65). This variable was log 10 transformed to correct for skew and kurtosis.

Drinking and Drug History Form for Children. The Drinking and Drug History Form for Children (DDH), the child-version of the adult Drinking and Drug History and Current Patterns, was used to assess adolescents' level of alcohol use and related problems. It was used at each annual and wave of data collection. Adolescents are asked to complete the measure on their own . Confidentiality was assured for participants, regardless of the content of their answers.

Although the DDH also screens for cigarette and other illicit drug use, for the purposes of the present study, only the alcohol section was used. The questions used as indicators covered the quantity and frequency domains of alcohol use and the number and frequency of alcohol-related problems. For alcohol use, adolescents reported how many days a month they drank alcohol and how many alcoholic drinks they consumed during those days for the previous 6 months and during the previous 6 month period before that. For the number of alcohol-related problems, adolescents are asked whether they have experienced problems related to their alcohol consumption in the past year. An example

item is "have you missed class because you drank." These items are scored 0 (have not experienced) to 1 (experienced in the last year). These variables were log 10 transformed to correct for skew and kurtosis.

RESULTS

Preliminary data analysis

Before testing the study hypotheses, preliminary analyses examined the nature of the data available from the current sample. Table 1 presents the descriptive statistics for parents. In general, mothers tended to be more religious and depressed than fathers, whereas fathers reported higher levels of alcoholism and anti-social behavior.

Table 1

Variable	Mothers $(N = 316)$		Fathers $(N = 310)$	
	<u>M</u>	(SD) /%	М	(SD)/ %
Education	13.3	(2.0)	13.5	(2.3)
Religious coping	2.1	(1.9)	1.4	(1.6)*
Moos religion scale	15.4	(2.0)	15.1	(2.2)*
Level of fundamentalism	1.9	(1.0)	1.7	(1.1)*
Service attendance	2.7	(1.4)	2.4	(1.3)*
How religious	3.0	(.8)	2.9	(.8)*
Depression	5.7	(6.4)	4.7	(5.9)*
Antisocial behavior	6.3	(4.1)	10.9	(7.5)*
Alcoholism diagnosis	18.2%		55.5%*	
ASPD Diagnosis	3.5%		20.9%*	

Descriptive statistics for parent variables

Note. ***** p < .05

Table 2 presents the descriptive statistics for adolescents. For the most part, significant differences were found between the control and AAL families, as opposed to

between control, NAAL and AAL families. Adolescents from AAL homes tender to fare worse that their counterparts in control or NAAL homes. In general, these adolescents came from families with lower socioeconomic status (SES), were less religious, and had fewer friends who they perceived to be religious. They reported higher levels of general externalizing behavior, alcohol use, alcohol-related problems, and anti-social behavior. They reported having more friends who used drugs, rebelled against authority, and who were involved in the legal system.

There were no significant differences in level of fundamentalism, frequency of attendance, how religious they perceived themselves to be, how many friends attending services weekly or who participated in religious youth groups. There were also several instances in which the adolescents did not differ significantly on alcohol use and alcohol-related problems; however, the means generally remained ranked in the expected order. Table 2

	Overall	AAL	NAAL	Controls
	(N = 628)	(N = 175)	(N = 194)	<u>(N = 259)</u>
Variable	X (SD)	X (SD)	X (SD)	<u>X (SD)</u>
Family SES	321.5 (131.2)abc	270.5 (88.6)	323.4 (129.0)	377.7 (139.6)
Age at T4	13.5 (.92)	13.6 (.86)	13.4 (.95)	13.5 (.93)
Moos scale	5.4 (2.3)c	4.9 (2.1)	5.4 (2.1)	5.8 (2.4)
Fundamental	1.6 (1.2)	1.7 (1.2)	1.5 (1.2)	1.7 (1.2)
Attendance	2.8 (1.3)	2.4 (1.3)	2.9 (1.3)	2.9 (1.3)
How religious	2.7 (.87)	2.5 (.82)	2.6 (.82)	2.8 (.93)

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Table 2, continued

Friends/ mon	2.7 (1.3)c	2.5 (1.2)	2.6 (1.3)	3.0 (1.3)
Friends/ wkly	2.7 (1.3)	2.4 (1.4)	2.6 (1.3)	3.0 (1.3)
Friends/ grps	2.0 (1.1)	1.8 (1.1)	1.9 (1.1)	2.1 (1.1)
DP Drug use	0.0 (1.0)c	.27 (1.37)	.05 (1.1)	19 (.48)
DP Rebellion	0.0 (1.0)c	.24 (1.1)	.09 (1.1)	19 (.80)
DP Crime	0.0 (1.0)c	.27 (1.5)	02 (.90)	14 (.65)
AEB	48.5 (10.4)bc	51.1 (11.9)	47.8 (9.9)	47.4 (9.5)
ASB 13	7.7 (9.5)c	10.9 (13.0)	7.7 (8.9)	5.8 (6.5)
ASB 14	10.0 (12.7)bc	15.0 (17.1)	9.9 (12.9)	7.0 (7.4)
ASB15	11.3 (12.2)c	15.1 (14.9)	11.4 (11.4)	8.8 (10.1)
ASB 16	14.0 (14.4)abc	19.4 (19.2)	14.0 (12.9)	10.2 (9.7)
ASB 17	16.3 (14.8)ac	20.0 (18.4)	17.7 (14.9)	12.4 (10.5)
AU 13	.23 (.91)	.38 (1.2)	.16 (.61)	.18 (.85)
AU 14	.55 (2.2)c	.91 (2.7)	.65 (3.0)	.26 (1.0)
AU 15	1.3 (3.8)	2.0 (6.9)	1.3 (3.5)	.80 (3.5)
AU 16	2.6 (5.8)ac	3.9 (6.9)	3.1 (6.1)	1.3 (4.3)
AU 17	3.5 (5.9)ac	5.5 (8.2)	3.7 (5.5)	2.1 (3.8)
ARP 13	.20 (.90)	.25 (1.1)	.19 (.91)	.16 (.81)
ARP 14	.40 (1.3)	.53 (1.3)	.62 (1.8)	.17 (.68)
ARP 15	1.0 (2.3)c	1.3 (2.4)	1.4 (3.0)	.53 (1.5)
ARP 16	1.6 (3.0)c	2.5 (3.6)	1.5 (2.8)	1.0 (2.6)
ARP 17	1.8 (3.0)	2.2 (3.3)	2.1 (3.1)	1.2 (2.5)

Note. "a" indicates a significant difference between controls and NAALs; "b" between NAALs and AALs; "c" between controls and AALs. Deviant peer (DP) factors are standardized. Fundamental= level of fundamentalism; attendance= frequency of attendance at religious services; how religious= perceived level of religiousness; friends/mon= how many friends attend religious services monthly or more often; friends/wkly= how many friends attend religious services weekly or more often; friends/ grp= how many friends participate in religious extracurricular groups; AEB= adolescent externalizing behavior; AU= alcohol use; ARP= alcohol-related problems; ASB= antisocial behavior.

Missing Data

As with the vast majority of longitudinal projects, there was substantial missing data in these analyses, ranging from a low of 1.9% (N = 7) of mothers missing antisocial personality disorder diagnoses to a high of 67.1% (N = 452) of adolescent missing alcohol-related problems at age 13. Given the pervasivity of the missingness, list-wise deletion of cases with missing data was not an option,. The missingness in this study was assumed to be missing at random (MAR), as opposed to missing completely at random (MCAR), because there were degrees of both planned and unplanned missingness (e.g., collecting data once every 3 years versus forgetting to complete an instrument). Furthermore, additional reasons behind missing data, such as the higher attrition of control families versus alcoholic families, are able to be modeled.

Little's MCAR test was run in SPSS with adolescent and parent data separately to ascertain whether the missingness was indeed MAR. The test showed that the

missingness in the adolescent data was MCAR, as it was not significant ($\chi 2$ (df = 3327) = 3414.3, p = .15). However, for the parents, the test was significant ($\chi 2$ (df = 110) = 228.7, p = .00), suggesting that the missingness in parent data was MAR as opposed to MCAR.

Mplus 4.2 (Muthén & Muthén, 2007), the program chosen to analyze the data, implements a Full Information Maximum Likelihood (FIML) algorithm with the MISSING command. This model-based strategy allows for the distribution to be estimated from the existing data, without having to use one of a variety of data imputation techniques (i.e., multiple imputation [MI], similar response pattern imputation [SRPI]). FIML was advantageous as it is robust to moderate violations of its assumptions (e.g., MAR and multivariate normality), and provides unbiased estimates and standard errors when utilized with large datasets (Myrtveit, Stensrud, & Olsson, 2001). Results achieved with FIML are superior to others obtained via most techniques, and are approximately equivalent to those obtained with MI (L.K. Muthén, personal communication, July 23, 2007).

Latent Variable Measurement Models

Since the analyses utilized a latent variable approach for the most part, the measurement model for each of the latent independent variables was fit before proceeding with the structural model. In other words, the stability of the latent variables was examined to ensure that each accurately represents the data before paths between predictor and dependent variables are fit.

To ensure readability, a brief explanation of the forthcoming results and figures is warranted. One must be aware of the distinction between *manifest* and *latent* variables; both are utilized in this study. Manifest variables are directly measured with instruments,

and are graphically depicted as squares in diagrams. An example of this type of variable was adolescent externalizing behavior, operationalized as an adolescent's score on the CBCL broadband externalizing scale.

A latent variable, on the other hand, is measured by several different manifest variables (termed "indicators"), which are believed to collectively measure a more comprehensive underlying construct. Latent variables are depicted as circles in figures. A pertinent example is the parental psychopathology variable, which utilized maternal and paternal scores on alcoholism, depression, and antisocial behavior measures. Measurement models allow an examination of the degree of fit between the indicators and the latent construct. These models are presented to provide readers with more information regarding the stability and reliability of the models, but are not used to test the study hypotheses, per se.

Absolute fit of the latent variables was assessed with a variety of measures. These measures indicate to what degree the model constraints imposed upon the data fit the actual data. The guidelines set forth by Hu and Bentler (1999) were followed in assessing good to excellent fit. The following fit indices were used: a (preferably) non-significant chi-square; a less than 2:1 chi-square to degrees of freedom ratio; a comparative fit index (CFI) and Tucker-Lewis index (TLI) of .90 or greater; and a root mean square error of approximation (RMSEA) of less than or equal to .08. For the purposes of this study, moderate fit would be considered achieved if up to three of the fit indices failed to meet these guidelines; poor fit would be observed if four or more indices did not meet the guidelines.

Relative fit was assessed via chi-square difference tests, which tested whether a

model significantly differed from a model nested within it. If the nested, more parsimonious model is found to be significantly different from the less parsimonious model, it is generally considered to be superior.

Finally, standardized coefficients are presented. Without debate as to whether unstandardized or standardized coefficients are "better," standardized estimates were chosen to aid interpretation when comparing estimates. Whereas unstandardized coefficients (and their standard errors) are calculated from the raw data, standardized coefficients are calculated from data that the program has standardized (both independent and dependent variables). Thus, standardized estimates do not necessarily "match" the accompanying unstandardized standard errors; however, the level of statistical significance remains the same.

Parental Psychopathology

To test the initial parental psychopathology model, a latent variable was constructed using both parents' alcoholism diagnosis, level of antisocial behavior, and current depression. This model did not fit the data very well ($\chi 2$ (df= 5) = 21.0, p < .001, CFI = .91, TLI = .71, RMSEA = .10). An examination of the descriptive statistics and correlation matrix did not highlight any potential changes. However, the factor loading of paternal depression did not appear to be as strong in comparison to the other variables. In addition, modification indices suggested that allowing a covariance between paternal alcoholism and antisocial behavior would significantly improve fit. Conceptually, these changes made sense in that the MLS specifically recruited severely alcoholic men by virtue of their court-involvement, in addition to alcoholic men living in the community. Thus the sample in general, and the court-recruited subsample in particular, has a high

comorbidity of antisocial behavior, and is less likely to report similar levels of depression.

A subsequent model shown in Figure 1, in which these changes were made, showed an excellent fit with the data ($\chi 2$ (df= 4) = 3.0, p > .05, CFI = 1.0, TLI = 1.0, RMSEA = .00). Here, the variable loadings range in magnitude from relatively weak (.29 for mothers' depression and .25 for fathers' antisocial behavior) to moderately strong (.61 for mothers' alcoholism diagnosis and .64 for mothers' antisocial behavior). Given the significantly better fit, this second model was utilized in the subsequent analyses. Figure 1

Parent psychopathology measurement model



Note. Latent variable was standardized.

Parental Religiosity

Four models of parent religiosity were explored to determine the best fitting model. The first involved a) all indicators loading on one latent variable; the second involved a) separate latent variables for each parent, with covariance allowed between them; the third c) modeled a separate latent variable for each parent as well as a secondorder latent variable to account for the shared variation between the two; the final model consisted of d) a latent variable, with summed indicators across parents (i.e., one coping variable reflecting both mothers' and fathers' scores).

The first model a) showed an unacceptable fit with the data (χ^2 (df= 36) = 129.7, p < .01; CFI = .87, TLI = .84, RMSEA = .07), as did the second model b) (χ^2 (df= 36) = 103.2, p < .01; CFI = .91, TLI = .89, RMSEA = .06).

The second-order factor model c) performed similarly (χ^2 (df= 36) = 167.2, p < . 01; CFI = .82, TLI = .78, RMSEA = .08). However, the final model d), in which parent variables were summed, showed an excellent fit with the data (χ^2 (df= 5) = 4.5, p > .05; CFI = 1.0, TLI = 1.0, RMSEA = .00). The factor loadings were ranged from moderately strong (.55 for coping) to very strong (.86 for attendance). As the final model yielded the best fit with the data (all ps < .05), it was thus utilized in the structural models.

Figure 2

Parental religiosity measurement model



Note. Latent variable was standardized.

Adolescent Religiosity

Two models were examined to determine the best fit for the adolescent religiosity data. Similar to the parent religiosity models, one latent variable with all indicators and a second-order factor latent model were both run. The single variable model did not show a good fit with the data (χ^2 (df= 10) = 161.8, p < .05; CFI = .66, TLI = .49, RMSEA = .18). The second-order model, with Peer Behavior and Personal Attitudes as first-order factors and Adolescent Religiosity as the second-order factor, showed a significantly better fit with the data (χ^2 (df= 9) = 26.2, p < .05; CFI = .95, TLI = .91, RMSEA = .07). In this model, the Moos variable was dropped from the model due to lack of cohesion with the

other variables. As can be observed, the factor loadings on the second-order factors are strong; however, the first-order factor loadings, particularly that of the latent variable Attitudes, are weaker. As this model showed the best fit, it was selected for use in the structural models.

Figure 3

Adolescent religiosity measurement model



Note. Latent variables were standardized.

Deviant Peers

An exploratory factor analysis, using promax rotation, was run in SPSS to initially identify potential factors from the Peer Behavior Questionnaire. By examining the scree plots and eigenvalues, removing cross-loading items and items with a loading of less than .3, a three factor model with 20 items was identified as fitting the data best. The factors were labeled according to the theme of the item content. Factor 1, the drug use factor, contained items measuring drinking, smoking, and drug use. Factor 2, the rebellion factor, contained items pertaining to rebelling against rules or mores: making out with a member of the opposite sex, cheating, breaking curfew. Factor 3, the crime factor, included items involving running away, encounters with the police, court, and detention facilities.

In Mplus, which controlled the nestedness of the data, a confirmatory factor analysis was run with these 3 factors. The model showed an excellent fit with the data (χ^2 (df= 1) = 69, p > .05; CFI = 1.0, TLI = 1.0, RMSEA = .00), and the factor loadings were consistently strong across all three variables. Due to the excellent fit, this measurement model was used in the structural models.

Figure 4

Deviant peer measurement model



Note. Latent variable and indicators were standardized.

Hypothesis 1

Hypothesis 1, which stipulated that parental psychopathology (alcoholism, antisocial behavior, and depression) would have a direct negative effect on adolescent externalizing behavior, was tested with a direct path from parental psychopathology to adolescent externalizing behavior. In other words, increases in parental psychopathology would be related to increases in externalizing behaviors. Mother report showed an excellent fit with the data (χ^2 (df= 8) = 15.8, p = .05; CFI = .95, TLI = .91, RMSEA = .04). Interestingly, the model involving adolescent report of delinquent behavior showed a moderately poor fit with the data (χ^2 (df= 8) = 23.7, p > .05; CFI = .91, TLI = .83, RMSEA = .06). Supporting the hypothesis, parental psychopathology positively predicted both mother reported adolescent externalizing behavior (B = .32, S.E. = 2.63, p < .05), in Figure 5a, and adolescent reported (B = .20, S.E. = 2.11, p < .05), seen in Figure 5b. Due the substantial differences in fit indices, both reports were used in further analyses.

Figure 5a

Path diagram of Hypothesis 1: Mother report



Note. Latent variable and indicators were standardized. * indicates p < .05.

Figure 5b

Path diagram of Hypothesis 1: Self report



Note. Latent variable and indicators were standardized. * indicates p < .05.

Hypotheses 2a and 2b

The tests of Hypotheses 2a and 2b, which stated that parent and adolescent religiosity would predict decreases in externalizing behavior, were tested via direct paths from parent and adolescent religiosity to externalizing behavior.

The parent religiosity-adolescent externalizing behavior model fit well (χ^2 (df= 9) = 11.4, p > .05; CFI = .99, TLI = .99, RMSEA = .02). In line with the hypothesis, parental religiosity predicted decreases in mother reported adolescent externalizing behavior (B = -.17, S.E. = .39, p < .05) and self reported externalizing behavior (B = -.21, S.E. = .36, p > .05).

Figure 6a

Path diagram of Hypothesis 2a: Mother report



Note. Latent variable and indicators were standardized. * indicates p < .05.

Figure 6b

Path diagram of Hypothesis 2a: Self report



Note. Latent variable and indicators were standardized. * indicates p < .05.

In contrast, in Hypothesis 2b, the adolescent religiosity- mother reported externalizing behavior model showed only an adequately fitting model (χ^2 (df= 14) = 36.7, p > .05; CFI = .94, TLI = .91, RMSEA = .06). Despite a less than perfect fit, adolescent religiosity significantly predicted decreases in delinquency (B = -.26, S.E. = 2.6, p < .05). For self reported externalizing behavior, this was not the case; self reported externalizing behavior was not significantly predicted by adolescent religiosity (B = -.19, S.E. = 3.5, p > .05). The discrepancy in model fit and results was unlikely to be attributable to the use of maternal report of adolescent delinquency, as a model run with adolescent report showed a similarly fitting model (χ^2 (df= 14) = 38.3, p < .05; CFI =.93, TLI = .90, RMSEA = .06).

Figure 7a

Path diagram of Hypothesis 2b: Mother report



Note. Latent variable and indicators were standardized. * indicates p < .05.

Figure 7b

Path diagram of Hypothesis 2b: Self report



Note. Latent variable and indicators were standardized.

Hypothesis 3

Hypothesis 3, which stated that deviant peers would predict increases in externalizing behavior, was tested with a direct path. Figure 8a shows the model with mother reported externalizing behavior. The hypothesized model was an excellent fit with the data (χ^2 (df= 3) = 2.5, p > .05; CFI = 1.0, TLI = 1.0, RMSEA = .00). In accordance with the hypothesis, deviant peers predicted increases in mother reported externalizing behavior (B = .37, S.E. = .51, p < .05). Thus, an increase in deviant peer network was associated with increased externalizing behavior.

Figure 8a

Path diagram of Hypothesis 3: Mother report



Note. Latent variable and indicators were standardized. * indicates p < .05.

Figure 8b shows the model using self report externalizing behavior. A similar fit was found for self reported externalizing behavior (χ^2 (df= 3) = 6.4, p > .05; CFI = .99, TLI = .98, RMSEA = .05). A greater number of deviant peers was associated with increases in externalizing behavior (B = .55, S.E. = .67, p < .05).

Figure 8b

Path diagram of Hypothesis 3: Self report



Note. Latent variable and indicators were standardized. * indicates p < .05.

Full Model

Figures 9a and 9b present the full models with mother and self reported externalizing behavior, with standardized coefficients. Although there were no specific hypotheses made in regards to a full model, two were run to examine both the goodnessof-fit with the data as well as to determine whether religiosity remained significant when modeled with risk variables.

For the model using mother reported externalizing behavior, one that adequately fit the data was achieved (χ^2 (df= 225) = 381.6, p < .05; CFI = .92, TLI = .91, RMSEA = . 03). Despite the significant chi-square statistic, it was less than twice the degrees of

freedom, indicating satisfactory fit. In addition, both the CFI and TLI were above .9, and the RMSEA was below .05, all highlighting a good fit with the data. Given the complexity of the model, a better fitting model was unlikely to be attained.

Figure 9a

Full structural model: Mother reported externalizing behavior



Note. Standardized estimates are shown. SES, adolescent age, and sex were controlled for in this model. \bullet indicates p < .05.

The parameter estimates generally followed the previous hypotheses' predictions. In this model, sex, age, and SES were controlled for. Parent psychopathology predicted significant decreases in parent religiosity (B = -4.45, S.E. = -50, p < -0.05), but not adolescent religiosity (B = -0.4, S.E. = -14, p > -0.05). Parental religiosity predicted adolescent religiosity (B = -8.5, S.E. = -0.7, p < -0.5). Deviant peers was significantly predicted by parental psychopathology (B = .29, S.E. = .30, p < .05), but not by adolescent religiosity (B = -.08, S.E. = .14, p > .05). Although deviant peers significantly predicted mother reported externalizing behavior (B = .29, S.E. = .61, p < .05, respectively), parental psychopathology was only marginally predictive of externalizing behavior. Neither adolescent nor parental religiosity predicted externalizing behavior.

Figure 9b shows the self report model. The model showed a good fit with the data $(\chi^2 \text{ (df= 222)} = 951.4, p < .05; CFI = .92, TLI = .91, RMSEA = .03)$. Nearly identical results were found using self reported externalizing behavior, controlling for age, sex, and SES. Only deviant peers predicted externalizing behavior (B = .50, S.E. = 1.09, p < . 05). Parental psychopathology failed to reach significance, and neither parental nor adolescent reported religiosity predicted externalizing behavior.
Figure 9b

Full structural model: Self reported externalizing behavior



Note. Standardized estimates are shown. SES, adolescent age, and sex were controlled for in this model.

Attempts to run four moderated mediation models, in which the full model was estimated separately for a) controls/ NAALs and AALs, and b) controls, NAALs, and AALs, for both mother and self reported externalizing behavior, were unsuccessful to due the lack of variance in the maternal alcoholism variables.

Latent growth modeling

Latent growth curve (LGC) modeling was used to test hypotheses 4 and 5. This technique, in an SEM framework, has been successfully used in numerous studies of adolescent alcohol use and externalizing behavior (Bray et al., 2001; Bray, Adams, Getz,

& McQueen, 2003; Colder, Campbell, Ruel, Richardson, & Flay, 2002; Curran et al., 1997; Fuzhong et al., 2002; Muthén & Muthén, 2000; Wills et al., 2003). This analytic strategy enables model specification of variables as predictors of both the initial level (i.e., intercept) and the trajectory (i.e., slope or rate of change) of the dependent variable over time. It also allows for measurement error to be specified, as it operates in a latent variable SEM framework.

There are several assumptions that are required by LGC in a SEM framework, as stated by Kline (1998). First, there must be a minimum of three, equally spaced in time, indicators; otherwise, one would be modeling a straight line. The indicators must be continuous and use the same metric over time. Finally, they can not be standardized. In total, twelve models were run for Hypotheses 4 and 5; six for mother reported externalizing behavior and 6 for self reported externalizing behavior. The aforementioned fit indices were used here to evaluate model fit.

Unconditional models

Measurement models were run for each of the three dependent variables: alcohol use, number of alcohol-related problems, and antisocial behavior. These unconditional models were examined to ascertain sufficient fit for further modeling. The modeled rate of change was linear.

Alcohol use

A standard latent growth curve model, with yearly indicators of alcohol use, initially showed a poor fit with the data (χ^2 (df= 13) = 171.8, p > .00; CFI = .13, TLI = . 33, RMSEA = .14). Allowing the slope loading at age 13 alcohol use to be freely estimated, as opposed to set a priori, increased model fit significantly (χ^2 (df= 9) = 42.3, p

< .05; CFI = .82, TLI = .80, RMSEA = .08). Conceptually, this finding fit expectations for alcohol use initiation. Many adolescents are just beginning to experiment with alcohol and other substances at age 13, with use becoming more frequent and consistent with age. This also fits with literature showing that 14 years old is the median age at which adolescents begin using alcohol (Wong et al., 2006)

Alcohol-related problems

Similar to alcohol use, the initial standard model did show a good fit with the data, but had a non-positive definite theta matrix (χ^2 (df= 10) = 22.1, p > .05; CFI =.87, TLI = .88, RMSEA = .05). Attempts to free the slope loading at age 17 and setting the residual variance of the age 13 indicator met with success, with the best fitting, stable model achieved when it was allowed to be freely estimated. This change resulted in a moderately fitted model (χ^2 (df= 10) = 22.3, p > .05; CFI =.87, TLI = .87, RMSEA = .05). This adjustment also fit conceptually: it takes some period of time to have begun consuming alcohol before problems related to consumption emerge.

Antisocial behavior

A good fit was found when the initial model was run (χ^2 (df= 10) = 33.5, p < .05; CFI =.93, TLI = .93, RMSEA = .06), and thus this model was used to test the hypotheses. <u>Conditional models</u>

Conditional models involve a predictor variable (in this case, adolescent externalizing behavior) in relation to the latent growth model. In the present study, two hypotheses involve conditional models: Hypotheses 4 and 5.

Hypothesis 4

Hypothesis 4, which stipulated that adolescent externalizing behavior will be related to greater initial levels of and slopes of future adolescent deviant behavior (i.e., alcohol use, related problems, and delinquency), was tested with paths from externalizing behavior to the intercepts and slopes of alcohol use, alcohol-related problems, and antisocial behavior.

Alcohol Use

Figures 10a and 10b present the data for this model. The hypothesized model using mother reported externalizing behavior and covariates (age and gender) moderately fit the data (χ^2 (df= 27) = 76.1, p > .05; CFI = .86, TLI = .83, RMSEA = .05). Mother reported externalizing behavior was significantly related to both the initial level (B = .33, S.E. = .001, p < .05) and rate of change (B = .35, S.E. = .001, p < .05) in alcohol use over time. In other words, as externalizing behavior increased, the initial level of alcohol use and rate of change in alcohol use both increased.

Figure 10a





Note. Standardized estimates are shown. Age and sex were controlled. For parameter estimates, * indicates that p < .05; for latent variable loadings, * indicates a free parameter.

Using self reported externalizing behavior, the model showed a similar fit (χ^2 (df= 27) = 71.8, p > .05; CFI = .88, TLI = .88, RMSEA = .05). Similar to the results using mother report, externalizing behavior predicted both the intercept (B = .42, S.E. = .001, p < .05) and slope (B = .35, S.E. = .001, p < .05) of alcohol use. In other words, as externalizing behavior increased, the initial level of alcohol use and rate of change in alcohol use both increased, regardless of reporter.

Figure 10b

Conditional LGM: Alcohol use using self report



Note. Standardized estimates are shown. Age and sex were controlled. For parameter estimates, * indicates that p < .05; for latent variable loadings, * indicates a free parameter..

Alcohol-related Problems

Figures 11a and 11b show this model. The hypothesized mother report model, which also included gender and age as covariates, demonstrated a moderate fit with the data (χ^2 (df= 28) = 52.8, p > .05; CFI = .86, TLI = .84, RMSEA = .04). In contrast to hypotheses, the intercept and rate of change in alcohol-related problems were not predicted by mother reported externalizing behavior.

Figure 11a





Note. Standardized estimates are shown. Age and sex were controlled. For parameter estimates, * indicates that p < .05; for latent variable loadings, * indicates a free parameter.

Using self reported externalizing behavior, the model showed a good fit with the data (χ^2 (df= 28) = 42.6, p > .05; CFI = .93, TLI = .91, RMSEA = .03). As hypothesized, externalizing behavior predicted the intercept (B = .21, S.E. = .001, p < .05) and slope (B = .32, S.E. = .001, p < .05) of alcohol-related problems. In other words, as externalizing behavior increases, a parallel increase was observed with the level of and rate of change in alcohol-related problems.

Figure 11b



Conditional LGM: Alcohol-related problems using self report

Note. Standardized estimates are shown. Age and sex were controlled. For parameter estimates, * indicates that p < .05; for latent variable loadings, * indicates a free parameter.

Antisocial Behavior

Figures 12a and 12b show this model. With sex and age as controls, the model using mother reported externalizing behavior showed an adequate fit with the data (χ^2 (df= 28) = 96.8, p < .05; CFI = .91, TLI = .89, RMSEA = .06). Externalizing behavior was related to both the initial level of antisocial behavior (B = .40, S.E. = .06, p < .05), and the rate of change in behavior (B = .27 S.E. = .02, p < .05). Thus, as externalizing

behavior increased, both the initial level of and rate of change in alcohol-related problems.

Figure 12a

Conditional LGM: Antisocial behavior using mother report



Note. Standardized estimates are shown. Age and sex were controlled. For parameter estimates, * indicates that p < .05.

Using self reported externalizing behavior, the model showed a good fit with the data (χ^2 (df= 28) = 99.9, p < .05; CFI = .92, TLI = .90, RMSEA = .06). Although externalizing behavior predicted the initial level of antisocial behavior (B = .74 S.E. = . 07, p > .05), it did not predict the rate of change in antisocial behavior.

Figure 12b





Note. Standardized estimates are shown. Age and sex were controlled. For parameter estimates, * indicates that p < .05.

Hypothesis 5

Hypothesis 5, using comorbid parental alcoholism/ ASPD as the moderator, posited that the path from externalizing behavior to the intercepts and slopes of the dependent variables will be stronger for COAs with an antisocial parent. Specifically, for families with at least one parent with alcoholism and ASPD, externalizing behavior will more strongly predict the initial levels and rates of change in alcohol use, problems related to alcohol use, and antisocial behavior. For these models, an interaction term was included in order to determine whether or not the relationship between externalizing behavior and the intercept and slope of each dependent variable differed by alcoholism-ASPD comorbidity. Models were analyzed with externalizing behavior, group status, and the interaction between group status and externalizing behavior. If the interaction term was found to be significant, then the groups differed in the degree to which externalizing behavior predicted the intercept and slope of the dependent variables. Sex, adolescent age, and SES were covaried to control for potentially confounding effects.

Alcohol Use

The model using mother reported externalizing behavior, shown in Figure 13a, for alcohol use did not fit the data well (χ^2 (df= 35) = 267.7, p < .05; CFI = .60, TLI = .48, RMSEA = .09). The interaction term predicted the initial status of, but not the rate of change in, alcohol use (B = .65, S.E. = .001, p < .05). This finding indicates that the groups differ in the relationship between externalizing behavior and initial status of alcohol use.

Results from the model using self reported externalizing behavior, shown in Figure 13b, showed similarly fitting model (χ^2 (df= 35) = 272.2, p < .05; CFI = .56, TLI = .43, RMSEA = .10). Again, the interaction term predicted the initial status of alcohol use, but not the rate of change in alcohol use. Thus, the relationship between externalizing behavior and initial level of alcohol use differed by whether or not there was parental alcoholism/ ASPD comorbidity.

To explore whether the relationships varied by alcoholism status, as opposed to simply by comorbid alcoholism/ ASPD, three-group models for both mother and self

reported externalizing behavior were run. The results (not presented) were similar for both mother and self reported externalizing behavior.

Figure 13a

Conditional LGM for alcohol use by group using mother report



Note. Standardized estimates are shown. For parameter estimates, * indicates that p < .05; for latent variable loadings, * indicates a free parameter.

Figure 13b



Conditional LGM for alcohol use by group using self report

Note. Standardized estimates are shown. For parameter estimates, * indicates that p < .05; for latent variable loadings, * indicates a free parameter.

Figures 13c and 13d show the interactions between group and externalizing behavior predicting the intercept of alcohol use, using mother and self report, respectively. As can be observed in these graphs, regardless of reporter, adolescents from AAL homes report significantly higher initial levels of alcohol use compared to adolescents from control/ NAAL homes. Figure 13c

Interaction between group and mother reported externalizing behavior predicting the



intercept of alcohol use

Note. Y-axis is alcohol use; grey dotted line represents the comorbid AAL group; black solid line represents control/ NAAL group.

Figure 13d

Interaction between group and self reported externalizing behavior predicting the intercept of alcohol use



Note. Y-axis is alcohol use; grey dotted line represents the comorbid AAL group; black solid line represents control/ NAAL group.

Alcohol-related Problems

The model using mother reported externalizing behavior, shown in Figure 14, did not fit the data well overall (χ^2 (df= 36) = 204., p < .05; CFI = .51, TLI = .38, RMSEA = . 08). Here, the interaction term did not predict either the intercept or slope of alcohol-related problems.

Results using self reported externalizing behavior also showed a poor fitting model (χ^2 (df= 36) = 204.5, p < .05; CFI = .53, TLI = .41, RMSEA = .08). In contrast to the above findings, the interaction term predicted the rate of change in, but not the

intercept of, alcohol-related problems (B = .83, S.E. = .001, p < .05). In other words, the presence or absence of comorbid parental alcoholism/ ASPD predicted differences in the relationship between externalizing behavior and the rate of change in alcohol-related problems.

To explore whether these relationships varied by alcoholism status, as opposed to simply by comorbid alcoholism/ ASPD, three-group models for both mother and self reported externalizing behavior were run. The results (not presented) were generally similar for both mother and self reported externalizing behavior.

Figure 14a

Conditional LGM for alcohol-related problems by group using mother report



Note. Standardized estimates are shown. For parameter estimates, * indicates that p < .05; for latent variable loadings, * indicates a free parameter.

Figure 14b

Conditional LGM for alcohol-related problems by group using self report





Figure 14c shows the interaction between group and externalizing behavior predicting the slope of alcohol-related problems, using self reported externalizing behavior. As can be observed in these graph, adolescents from AAL homes report significantly greater increases in alcohol-related problems, as compared to adolescents from control/ NAAL homes. The interactions did not significantly predict the intercept of alcohol-related problems, and the interaction using mother reported externalizing behavior did not predict the slope of alcohol-related problems.

Figure 14c

Interaction between group and self reported externalizing behavior predicting the slope of alcohol-related problems



Note. Y-axis is alcohol-related problems; grey dotted line represents the comorbid AAL group; black solid line represents control/NAAL group.

Antisocial Behavior

Figures 15a and 15b present the graphs for antisocial behavior. Using mother reported externalizing behavior, model fit indices suggested a poor fit with the data (χ^2 (df= 36) = 215.0, p < .05; CFI = .81, TLI = .76, RMSEA = .09). The interaction term predicted the initial status of (B = 1.4, S.E. = .13, p < .05), but not the rate of change in, antisocial behavior. In the model using self reported externalizing behavior, the model also showed a poor fit (χ^2 (df= 36) = 245.3, p < .05; CFI = .80, TLI = .75, RMSEA = .09). Similar results were found with self report data, with the interaction predicting the

intercept (B = .84, S.E. = .13, p < .05) but not the slope of antisocial behavior. In other words, for both models, the groups differed in the relationship between externalizing behavior and the initial status of antisocial behavior.

Figure 15a

Conditional LGM for antisocial behavior by group using mother report



Note. Standardized estimates are shown. For parameter estimates, * indicates that p < .05.

Two three-group models, one for each externalizing behavior reporter, were run to examine the extent to which the relationships between externalizing behavior and the intercept and slope of antisocial behavior differed by alcoholism and ASPD comorbidity. Again, these results (not presented) were roughly the same as the two-group models.

Figure 15b



Conditional LGM for antisocial behavior by group using self report

Note. Standardized estimates are shown. For parameter estimates, * indicates that p < .05.

Figures 15c and 15d show the interactions between group and externalizing behavior predicting the intercept of antisocial behavior, using mother and self report, respectively. As can be observed in these graphs, regardless of reporter, adolescents from AAL homes report significantly higher initial levels of antisocial behavior compared to adolescents from control/NAAL homes. The interactions did not significantly predict the rate of change in antisocial behavior with either mother or self reported externalizing behavior.

Figure 15c

Interaction between group and mother reported externalizing behavior predicting the intercept of antisocial behavior



Note. Y-axis is antisocial behavior; grey dotted line represents the comorbid AAL group; black solid line represents control/NAAL group.

Figure 15d

Interaction between group and self reported externalizing behavior predicting the



intercept of antisocial behavior

Note. Y-axis is antisocial behavior; grey dotted line represents the comorbid AAL group; black solid line represents control/NAAL group.

DISCUSSION

This study sought to more thoroughly understand the complex etiology of, and relative influence of risk and protective factors on, problem behaviors in COAs. As a whole, these findings can be taken as supporting the theoretical background put forth by Jessor and Jessor (1977) and Hirschi (1969). However, in comparison to more contemporary research, these results both support and contradict previous findings.

Comparable to other studies, parental psychopathology (alcoholism, depression, and antisocial behavior) and deviant peers were found to be positively related to adolescent externalizing behavior. When modeled individually, parental, but not adolescent, religiosity was found to be negatively predictive of externalizing behavior.

When the full model was implemented (which included age, sex, and SES as covariates), deviant peers remained significantly and positively related to externalizing behavior. These results thus partially support the socialization/ social learning theories, which stress the role of parents and peers in the development of both prosocial and problematic behaviors.

However, neither parent nor adolescent religiosity were significant predictors of externalizing behavior. Indeed, adolescent religiosity showed a positive relationship with externalizing behavior. It seems that the role of formal institutions (i.e., religious) in socialization/ social learning, in contrast to the roles that family and peers play, was not found to be significant.

One possible explanation arises from contradictory results in the adult alcoholism literature. Previous studies which found that religious experiences were associated with less alcoholism utilized samples of formally identified alcoholics- individuals who

acknowledged (but may not have agreed) that he/ she may have an alcohol problem. The present study accessed a sample of adolescents whose parents (or themselves) may or may not have been identified as having drinking problems. It may be a matter of hitting "rock bottom" and acknowledging a lack of control that allows religiosity a relationship with problem behaviors. Indeed, the steps of AA directly demonstrate that one must cease all control of their drinking before change in drinking can occur. However, such a harrowing experience is something that these adolescents are very unlikely to have undergone.

Another reason behind religiosity's drop from significance might be due to the use of SEM. Few of the studies investigating religiosity as a protective factor used SEM, instead conducting hierarchical linear or logistic regressions, which do not simultaneously calculate parameter estimates. Additionally, the majority of the literature (an exception: Johnson et al., 2001) has only examined religiosity as a solitary main effect, without taking into consideration risk factors. Thus, previous studies may not have accurately appropriated variance by estimating parameters simultaneously or neglecting potential confounding variables. It is likely that in the current study, variance that might otherwise have been attributed to religiosity was more accurately accounted for by other variables. A lack of significance might be observed more frequently if the available literature utilized a more comprehensive approach to data analyses.

Interestingly, the above statement is supported by additional analyses. When parental religiosity was dropped from the model, the coefficient between adolescent religiosity and externalizing behavior remained non-significant, but reversed in direction (B = -.01, p > .05). It appears that the high degree of multicollinearity between parent and

adolescent religiosity created a confounding effect, which resulted in the coefficient's opposite direction.

In the latent growth models, externalizing behavior was initially found to be positively related to the initial level and rate of change of alcohol use, the rate of change of alcohol-related problems, and the initial level of antisocial behavior. These results broadly parallel findings from previous research, which demonstrate the antecedent role of externalizing behavior as a predictor of other problem behaviors, such as alcohol use, alcohol-related problems and antisocial behavior (Chassin et al., 1999; Hussong et al., 1998).

When an interaction was introduced to examine whether the alcoholism/ ASPD comorbidity exacerbated the relation between externalizing behavior and the development of alcohol use, problems, and antisocial behavior, the results were unexpectedly inconsistent. Although these results do not fully support Hypothesis 5, they are consistent with the literature, which generally finds that AAL adolescents show great levels of problematic behaviors (Hussong, Wirth, Edwards, Curran, Chassin, & Zucker, 2007). As was shown in Table 2, AAL adolescents reported consistently higher levels of alcohol use and antisocial behavior. Thus there was evidence of difference in *intercepts*, or initial levels of alcohol use and antisocial behavior.

In contrast, the rate of change from one time to another, the slope, was roughly equivalent across groups for alcohol use and antisocial behavior, but not alcohol-related problems. Interestingly, this result was only observed using the self, not mother, reported externalizing behavior.

So what does this mean? Higher levels of externalizing behavior exacerbate more

specific manifestations of problem behavior, primarily for adolescents in more impaired families. Reflecting upon Moffitt's (1993) distinction between adolescent-limited versus life-course persistent (LCP) behavior, it would be reasonable to expect that *these* adolescents would be more likely to be classified as life course persistent in their problem behavior. In an analogous vein, it makes sense that these adolescents would also be the ones to show more of a boost, engaging in more (both in number and frequency) problematic behaviors.

These findings highlight the potential etiological differences in problem behaviors among COAs. As stated previously, a great deal of attention has been paid to classifications or subtypes of alcoholism, with theories generally separating based on duration and severity (Babor et al., 1992; Cloninger, 1987; Zucker, 1994; Zucker et al., 1996). These findings, highlighting the greater severity and earlier onset of problem behaviors, directly supports the aforementioned typological background.

These results also expand upon previous findings from this study. Using earlier data, Loukas et al. (2003) found that comorbid parental psychopathology intensified the effect of child undercontrol on their problem behaviors when the children where aged three to twelve years old. Indeed, in comparing this research to Loukas' findings, the same results were observed in these children nearly a decade later, when they were progressing through adolescence. This trend speaks to the need for extremely early intervention to assuage what has been demonstrated as an anticipated chain of events (Maguin et al., 1995).

What remains in question is the interactions' predictive inconsistency. Based on the typological literature, one would expect that the interaction term would predict both

the intercept and the slope of alcohol use, problems, and antisocial behavior. It is unclear as to why this might be the case; one could speculate that a lack of variance in the problem behaviors during early adolescence could hamper what would otherwise be a significant relationship. Indeed, this relationship may become stronger into early adulthood, a time in which late teens and young adults attend college and enter an environment that enables greater levels of drinking and reckless behavior.

Directions for future research

Although this study furthers our knowledge on the relative influence of risk and protective factors, as well as the development of problem behaviors during adolescence, several limitations would ideally be addressed in future research. One of the weaknesses of the current research was the lack of psychometrically validated religiosity measures; this likely contributed to the relatively poor fit of the adolescent religiosity model. Using such measures would increase both the reliability and validity of the results.

Unlike other disciplines such as medicine, a general weakness in psychological research is the reliance on correlational designs; there are no experimental or quasi-experimental designs. Without such research, we can neither conclusively state that religiosity has protective effect on behavior, nor that it mediates the relationship between parental psychopathology and behavior.

However, to implement experiments is fraught with ethical concerns. For example, an ideal research question based on this research is whether a religious intervention would change behavioral outcomes among adolescent from AAL, NAAL and control families. In order to create such an experiment, however, researchers would have to exert some control over the the conditions of parental psychopathology and

religious intervention. Needless to say, it is unethical to force someone drink until he or she meets criteria for alcoholism or to ascribe to a particular religion; thus the opportunities for implementing such experiments would necessarily be selective.

Another weakness was the comparatively small sample of adolescents who endorsed particular questions; a larger sample size for the two group analyses was especially warranted. For example, due to the relatively few adolescents who answered the alcohol-related problem questions, the sample sizes dropped substantially when divided into subgroups. Understandably, as adolescents are just beginning to experiment with alcohol use, and so are unlikely to be experiencing alcohol-related problems at this point in their lives. Many simply do not complete the questions because they have no experience with them; they were not aware, obviously, that not answering means something different from answering "not applicable."

Unfortunately, this drop contributes to decreased power to detect an effect between the groups, and the ability to run complex models such as latent growth curves. Ideally, researchers could recruit a larger group of adolescents. In addition, a very necessary strategy would be to ascertain that the adolescents were fully completing the instruments, despite not positively endorsing all items. This issue likely also contributed to the high degree of missingness in the dependent variables.

Implications for intervention

In contrast to the conclusion from literature on religiosity and child/adolescent psychopathology, which suggests that religiosity is a potent protective factor, neither parent nor adolescent religiosity predicted externalizing behavior when modeled with risk factors. However, this was the first study to examine religiosity as a protective factor in a

sample of COAs. The closest approximation was conducted by Miller, Weissman, Gur, and Adams (2001), who explored the relationship in a sample of children with opiateaddicted parents. Although they found support for religiosity as a protective factor, their study was cross-sectional and did not utilize latent variables.

These results do, however, highlight the negative impacts both of parental psychopathology and delinquent peers. Thus, the most beneficial intervention for adolescents may in fact not lie solely with the adolescents themselves, but the people in their environment. In addition, family, as opposed to adolescent-only, therapeutic interventions may be more efficacious; interventions aimed at changing parent behavior, while ideally fruitful (Andreas, O'Farrell, & Fals-Stewart, 2006), may be met with significant resistance as the parent (s) point to their child's drinking or antisocial behavior as the "problem."

Beyond therapeutic interventions, socially-based strategies were also supported by these findings. Given that COAs are at higher risk for developing relationships with delinquent peers (Curran, Stice, & Chassin, 1997; Fergusson & Horwood, 1999), and that having delinquent peers increases delinquency, targeting peer group interactions appears to be a warranted, though difficult-to-implement, intervention. Practically speaking, one can not "make" an adolescent befriend another, and adolescents known for delinquency may be shunned from the general student body. However, providing opportunities to engage with adolescents from different social groups and allowing participation in prosocial group activities (e.g., academic or sports teams/ clubs) may be feasible approaches. A potentially fruitful line of both intervention and research could follow from such an endeavor.

Summary

This research has augmented knowledge of the degree to which religion contributes to resilience during adolescence and the degree to which alcoholism/ ASPD comorbidity affected the relationship between externalizing behavior and trajectories of problem behaviors. Although neither parental nor adolescent religiosity bore out as protective factors, there were significant differences in the relationship between externalizing behavior and trajectories of problem behaviors by alcoholism/ ASPD comorbidity. At the time of this dissertation, there was no published research on religion as a protective factor that has used a representative sample of COAs. Indeed, only one study could be identified as studying a sample of similarly at-risk adolescents (Miller, Weissman, et al., 2001). Moreover, the longitudinal design of this research allowed for stronger conclusions regarding the causal relations between risk and protective factors and outcomes, a weakness in the literature.

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