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LOMA LINDA UNIVERSITY
Graduate School

Ecological Influences on Adolescent Behavior

by

Michelle Moon

A Dissertation submitted in partial satisfaction of
the requirements for the degree of
Doctor of Philosophy in Psychology

September 2003

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Each person whose signature appears below certifies that this dissertation in his or her opinion is adequate, in scope and quality, as a dissertation for the degree Doctor of Philosophy.

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ABSTRACT OF THE DISSERTATION

Ecological Influences on Adolescent Behavior

by

Michelle Moon

Doctor of Philosophy, Graduate Program in Psychology

Loma Linda University, September 2003

Dr. Matt L. Riggs, Chairperson

This study examined the ecological influences, outlined by Bronfenbrenner (1994), to understand adolescent behavior. It was hypothesized that proximal ecological influences would be significantly related to behavioral outcomes. Participants (N= 244) were students attending traditional and continuation high schools in a Southern California school district. They completed a 15-page questionnaire that included scales used to assess the ecological domains of Family Process, Peers, Community (school climate), Personal Characteristics, and the criterion measures of Drug and Alcohol Use, School Performance and Gang and Criminal Activity.

Principal axis factor extraction with oblique rotation was performed on predictor variables related to the ecological domains and the criterion variable of Delinquency. Five factors were extracted. Attachment to Peers was not included in the factor analysis because of problems of multicollinearity, but Attachment to Peers was included as a variable in the regression analyses. The five factors extracted were conceptualized into "Personal Characteristics," "School and Parental Involvement," "Drug and Alcohol Use," "School Performance," and "Gang and Criminal Activity." Three two-step hierarchical multiple regression analyses were carried out to examine the relationship among the three predictors and the three criterion variables. In each of the analyses, the

variable Personal Characteristics was entered in using standard entry on the first block, and the subsequent predictors were also entered standard entry, on step two. In all three regression analyses Personal Characteristics accounted for a significant amount of the variance when entered alone on Step 1. When entered on Step 2 with School and Parental Involvement and Attachment to Peers, it was found to predict an insignificant amount of variance for Drug and Alcohol Use or Gang Activity, and only a small amount of variance on School Performance. School/Parental Involvement was a significant predictor in the regression analyses for all criterion measures: Drug and Alcohol Use, Gang and Criminal Activity, and School Performance. Although Attachment to Peers accounted for less of the variance than the School/Parental Involvement variable, it was predictive in two of the three regression analyses, predicting Drug and Alcohol Use and Gang and Criminal Activity. The results of the present investigation supported an ecological model and the importance of proximal influences in the prediction of adolescent behavior.

INTRODUCTION

Overview

Adolescents engage in risk-taking behaviors despite the chance of injury, arrests, incarceration, sexually transmitted diseases, drug addiction and other serious consequences. Those involved in risk-taking behaviors often experience short-term gain, satisfaction, or a feeling of instant gratification (Muus & Porton, 1998). Of the 14%-25% of adolescents that drop out of school, 30% will be involved in the criminal justice system. In fact, according to Census Bureau data, over 50, 000 adolescents are in prison or security facilities, and this number reflects only 3%-6% of the adolescents committing offenses punishable by incarceration (Muus, 1998). From 1985 to 1995 there was a 141% increase in the number of murders committed by teenagers, with nearly 4,000 homicides in 1995 alone (Muus, p. 428). Overall, it is estimated 1 million youth commit serious offenses, and if less serious offenses (e.g., truancy, running away, and vandalism) were considered, approximately 6 million adolescents would be involved in unlawful acts each year (Muus, 1998).

This is clearly a significant and ongoing societal concern, and politicians, educators, social workers and families, among many others, have endeavored to discover what it is that leads one adolescent to engage in risky behaviors while another adolescent does not. Researchers in this arena have sought to identify variables that influence an adolescent to become involved in risky or delinquent behaviors. Some of the variables that have been examined include: alienation from parents, family and society, lack of parental support and supervision, family disorganization, academic failure, low self-esteem, peers who are negative influences and who also engage in antisocial or deviant

behaviors, depression, poverty, and male gender. Unfortunately, until very recently, most of the research designed to examine these variables have relied on a single variable approach.

With respect to the study of adolescent delinquency, the single variable approach focuses on a single factor and its relationship to one measure, or a relatively narrow set of measures, of delinquent behavior. As Sullivan & Wilson (1995) point out in describing this limitation of the field, variables selected have typically been based on a theoretical view of one particular cause of adolescent problem behaviors and delinquency. For example, low self-esteem or attachment to peers (Wang, 1994) have each, alone, been shown to influence criminal activity in adolescents. While this approach has dominated the field, more recent models relying on an ecological and integrated approach (Bronfenbrenner, 1994; Lerner, 1996) to understanding delinquency have endeavored to identify features of the context within which the adolescent has developed which contribute to the likelihood of risky behaviors.

For Bronfenbrenner (1994), the understanding of human development requires consideration of the entire ecological system in which growth occurs. The person, here the adolescent, is conceptualized as being at the center of a set of inter-related environments. An individual is seen as actively involved in direct interaction with other people in each of these environments. This dynamic interaction is central to Lerner's view of the reciprocity of influence that exists in the course of human ontogeny (Lerner, 1996). The context of an adolescent's development varies from the influence of proximal factors, such as environments provided by family, peers, schools and neighborhoods, to more distal factors, the community, wider cultural beliefs and values. As Lerner (1996)

points out, “not only do theoretical views such as developmental contextualism provide an agenda for a developmental, dynamic, and systems approach to research about adolescent development, but they also allow researchers to envision the possibility of promoting positive developmental trajectories in adolescents” (p. 785). In this regard, rather than blaming an adolescent for his or her delinquent behaviors, we can seek an approach to understanding such behaviors that acknowledges the “network encompassing familial, community, institutional, and cultural components” (p. 785) of the ecology within which that adolescent has developed. Intervention programs that have been created using variables that are discrete and unique have not produced significant changes in the lives of adolescents (e.g., Lerner, 1996). Ecologically based developmental contextualism may provide a theoretical conceptualization for the development of more effective approaches to intervention and prevention.

Using an ecologically-based developmental contextualism model, the present study will examine adolescents who are engaged in low-risk, at-risk and delinquent behaviors. This conceptual model will provide a wholistic view of the multiple ecological factors influencing adolescents’ behavior. The factors to be examined include assessments of the major dimensions of the context in which adolescents develop: family, peers and school. Importantly, for this conceptual and methodological approach, multiple outcome measures will also be used to assess the impact of these variables. Outcome measures include assessments of adolescents’ psychological adjustment, incidence of problem behavior, and performance in school and extracurricular activities. This approach will offer a clearer, more comprehensive understanding of the ecological environment and its impact on adolescent behavioral outcomes. Further, it is expected

that this model will contribute to our understanding of adolescent development during a critical transition and also contribute to efforts to provide more effective approaches to intervention and prevention.

Literature Review

Longitudinal research on adolescent development has indicated that most adolescents successfully navigate this important transitional period (e.g., Block & Block, 1980; Furstenberg, Brooks-Gunn, & Morgon, 1987). As Graber and Brooks-Gunn (1996) indicate, understanding how people negotiate developmental transitions is crucial for the understanding of risk and resilience during adolescence, as well as across the life span. However, adolescence has also been shown to be a likely time for the development of problematic and delinquent behaviors (Haugaard, 2001). It is important to study the factors contributing to problematic transitions for adolescents, as these young people are suffering, and the negative consequences of their actions during this period may have a life long impact. Moreover, adolescents' problematic behaviors also have direct deleterious effects on their families and come at a substantial cost to society (Haugaard). Researchers in this area have endeavored to understand the factors that contribute to why some adolescents are at-risk for the emergence of problematic and delinquent behaviors (Graber & Brooks-Gunn).

There is general consensus in the literature that there are multiple causal paths contributing to the emergence of delinquency and that these factors are dynamic and interactional (Thornberry, 1987). Until recently, however, researchers have examined relatively narrow domains of influence, relying on their particular theoretical view of the causes of adolescent problem behaviors and delinquency to direct their research (Sullivan

& Wilson, 1995). Thus, there are studies devoted to the examination of the effects of individual differences in reaction to factors associated with the transitions of adolescence (e.g., Graber, Brooks-Gunn, & Petersen, 1996). There are also a wide range of studies focusing on variables drawn from psychological, familial, sociological and community domains as they impact on measures of adolescent problem behaviors, delinquency and related adjustment problems (Sullivan & Wilson, 1995). Oftentimes, these studies will examine the effects of a single variable, drawn from one of the aforementioned areas, on one dimension of adolescent adjustment or behavior (e.g., Stouthamer-Loeber et al., 1993). As noted earlier, Sullivan and Wilson (1995) indicate that single variable explanations are limited in that they fail to explain the diversity of causal pathways and outcomes for juvenile delinquents. Moreover, as Haugaard (2001) indicates, delinquency needs to be broadly defined and the assessment of adolescent adjustment and related problematic behaviors requires multiple measures.

Adolescents develop within, and are influenced by, the multiple contexts of their families and communities. Their culture, peers, religious organizations, schools and groups to which they belong influence them. This contextual model, derived from an ecological perspective (Bronfenbrenner, 1977, 1986; Lerner, 1996) suggests that successful transitions result in part from a goodness of fit between the context of adolescents' environments and adolescents' individual characteristics (Graber & Brooks-Gunn, 1996). Generally, this model would predict an adolescent's outcomes based on the extent to which his or her needs are supported by features of their environment (Graber & Brooks-Gunn, 1996). As Sullivan and Wilson (1995) indicate, this contemporary view provides for a necessary new direction in the study of adolescent problem behavior and

delinquency. Research is then designed to examine the concept of integrated, complex, causal factors influencing adolescent outcomes. The role of familial, social structural and other relevant variables are examined, and present “a more comprehensive, more realistic approach to the multifaceted problem of contemporary delinquency” (Sullivan & Wilson, p. 120). As they suggest, this is an approach that is more rigorous and that requires more comprehensive assessment, but that avoids the limitations of single variable explanations. This is the conceptual and methodological approach utilized in Furstenberg, Cook, Eccles, Elder, and Sameroff’s “Managing to Make It: Urban Families and Adolescent Success” (1999), a comprehensive study of how family variables mediate community and other ecological variables and contribute to adolescent development. It is also the approach taken in the present investigation.

Furstenberg et al. (1999) used a conceptual model derived from Bronfenbrenner (1979) to assess environmental measures of potential influence on adolescents on a series of ecological levels. The risk factors consisted of six domains that reflected various ecological relations to the adolescent. The first domain was *family process* and included variables that were directly experienced by the child. These family microsystem variables included support for autonomy, discipline effectiveness, parental investment and family climate. The second domain, *parent characteristics*, included the mother’s education, efficacy, resourcefulness and mental health. The third domain was *family structure*, which consisted of parents’ marital status, household crowding and welfare receipt. The fourth domain, *management of community*, included institutional involvement, informal networks, social resources and economic adjustment. The fifth domain was *peers* and included variables that assessed involvement with prosocial and

antisocial peers. The sixth domain, *community*, assessed more distal variables, and included neighborhood socioeconomic status, neighborhood problems and school climate. To interpret developmental competence, five outcome measures were utilized: Parental reports of adolescent *psychological adjustment* on multiple mental health scales, self-reports of *self-competence*, *problem behavior* with drugs, delinquency and sexual behavior, and both parent and youth reports of *activity involvement* in sports, religious, extracurricular, and community projects, and lastly, parent and youth reports of *academic performance*.

Furstenberg et al. (1999) examined the variables that connect neighborhoods, families, and the developmental path of children. Specifically, they investigated how neighborhood conditions influence and are influenced by family processes and parenting strategies. They hypothesized that parents are instrumental in understanding how neighborhoods influence their children and how these families negotiate the external world might be an important mechanism mediating neighborhood opportunities. Overall, Furstenberg et al. found the pattern of relations between each of the ecological levels and adolescent behaviors were different for each of their outcome measures. Some risks were correlated at each ecological level while other risks were correlated to fewer ecological levels. When the differences between high-and low-risk groups were examined for each individual risk factor, Furstenberg et al. report that the effect sizes were small or moderate, rarely exceeding two thirds of a standard deviation. Consistent with the findings of Rutter (1979), they concluded that it is not any one specific environmental factor that makes a difference, but the number of risk factors a child experiences. Furstenberg et al. found that adolescents with more risk factors were more likely to have

experienced negative outcomes while adolescents with fewer risk factors were associated with better outcomes.

The approach of the Furstenberg et al. (1999) investigation indicates the value of the ecological approach to the study of the integrated, complex, causal factors influencing adolescent outcomes. This wholistic, comprehensive, and realistic approach to the multifaceted problems of contemporary delinquency, as suggested by Sullivan and Wilson (1995), also provides the context for the methodological and conceptual approach taken in the present study. As with Furstenberg et al., the present investigation was designed to explore significant domains of potential influence and multiple adolescent outcomes. These variables and related measures are drawn from the more narrowly focused adolescent literature, which has heretofore emphasized the single variable approach. Yet, the overarching conceptualization of the present study, its goals and methodological approach, differ in important ways from that used by Furstenberg et al. Most importantly, the purpose of their study was to examine how family and parenting practices mediate neighborhood influences on adolescents. This was not the intention of the present study. Here, the wholistic examination of ecological factors and adolescent outcome measures will be used in an integrated manner to build a conceptual framework that will contribute to the understanding of adolescent outcomes. Moreover, the methodology used will improve on Furstenberg et al. in several substantial ways and will enable reevaluation of their conclusion regarding the cumulative deleterious impact of risk factors on adolescent outcomes.

The present investigation will examine the role of five environmental domains similar to the aforementioned six used by Furstenberg et al. (1999): family process,

parent characteristics, family structure, peers and community. The more distal management of community domain, examined by Furstenberg et al., was not considered. Rather, the more proximal factors of school community and climate were examined. A critical difference here is that within each domain examined, the measures utilized in the present study were each based on the literature, and were selected to contribute to the conceptual model of ecological influence under consideration. This approach differs from that of Furstenberg et al., who selected measures based on their research question, which was to determine the mediating role of the family on community influences. The empirical literature relating to the variables within each of the domains examined in the present study is reviewed below.

The Furstenberg et al. (1999) study was also limited in that their participants were young adolescents, ranging from 11-14-years-of -age. Given their age, very few of these adolescents had actually engaged in any significant delinquent behavior. In fact, of the 23 delinquent activities assessed, the mean number of these acts was barely more than one. There were also very low reports of health-compromising or aggressive behaviors. As the authors indicate, the incidence of these problem behaviors rises sharply with age and the obtained picture of adolescent behaviors, and their causes, might well have been markedly different had they examined these same youth three or four years later. In order to ameliorate this problem, Furstenberg et al. categorized their participants into quartiles, using the small differences they obtained to create their groups. Clustering adolescents in this manner and, then, finding seemingly insignificant differences in the effects of the ecological variables they considered seems problematic. It certainly calls into question their then using these relative small effects in an additive manner, to support a cumulative

risk model. The present study will assess older adolescents (15-18-years-of-age), some of whom have been expelled from traditional school for delinquent behavior. These latter adolescents have actually engaged in delinquent behaviors and are placed into a preliminary “delinquent” group by confirmatory self-reports as well as by schools or courts.

Ecological Domains of Influence

(The domains of influence examined in the present study, as well as the adolescent outcomes used are outlined in Table 1.)

Several problems occurring during adolescence, such as lower academic functioning, decreased social competence and an increase in delinquent behaviors have been shown to be associated with the family environment (Hetherington and Clingempeel, 1992; Holmbeck et al., 1995). Although correlations do not substantiate causation, many family process variables have been examined as important in influencing adolescents’ psychological health. According to Patterson (1982) conduct problems or delinquent behaviors among adolescents appear to be significantly influenced by their interactions in the family. These include attachment, family communication, trust, parenting styles and parental trust, to name a few (Heaven, 1994).

Family Process

Autonomy

Noom (1999) defined autonomy as “the ability to give direction to one’s own life, by defining goals, feeling competent and being able to regulate one’s actions.” Several authors have argued that the goal for adolescents is to gain autonomy while still

Table 1

Ecological Domains

Family Process	Autonomy Attachment Communication Parenting style
Parent Characteristics	Education Efficacy Work status
Family Structure	Marital status Welfare receipt
Peers	Attachment Relations
Community	School climate
 <u>Adolescent Outcomes</u>	
Psychological Adjustment	Depression Self-esteem Self-efficacy
Problem behavior	Drugs/alcohol/sex Violent activity Gang activity Criminal activity
Academic performance	Grades/ School placement
Activity involvement	sports, religion, extracurricular activities

maintaining their attachment (Hauser, 1991). Families that are able to encourage autonomy within a context of attachment provide a positive environment for psychosocial adjustment (Connel and Wellborn, 1990; Baltes and Silverberg, 1994). Similarly, healthy family relationships are fundamental to the successful development of autonomy (Grotevant & Cooper (1986).

Attachment

Armsden and Greenberg (1987) define attachment as an enduring affectional bond of substantial intensity with parents or peers that provides an overall feeling of trust, an adequate level of communication and a lack of isolation. Attachment then, is a consequence of the relationship within the family unit. Adolescents who are attached to their parents report greater perceived competence (Kenny, 1994), less depression (Papini and Roggman, 1992) and higher overall psychological well-being (Armsden and Greenber, 1987). According to Wiatrowski, Griswold, & Roberts (1981), the family environment is the source of attachment because parents act as controls and teach their children socially acceptable behavior. Research has also shown that adolescents with poor attachment to their parents are more likely to engage in delinquent behavior (Needle, 1988).

Communication

Important to the study of family processes and adolescent development is family communication. Familial communication occurs in dyads where individuals negotiate and define the nature of the relationships (Maccoby and Martin, 1983). Open, effective communication allows family members the opportunity to share their desires and needs. Family communication leads to cohesion, which promotes a feeling of connectedness

between family members (Olson, 1983). Previous research has demonstrated family communication and cohesion are related to adolescent reports of family life satisfaction (Henry, 1994) and to deviant behaviors (Tolan, 1988; Baer, 1999). Barnes and Olson (1985) demonstrated that when parent-adolescent communication is good, the family is more loving, more adaptable and flexible in solving family problems and feels closer to one another. Poor family communication has been found to be associated with self-reported interpersonal violence in males (Heaven, 1994b) and an increased likelihood of dropping out of high school (Bachman, Green, & Wirtanen, 1971; Cervantes, 1965).

Parenting Style

According to recent literature, there are three aspects of authoritativeness that contribute to a child's psychosocial outcome and academic success during adolescence: parental acceptance or warmth, behavioral supervision and strictness, and psychological autonomy granting or democracy (Steinberg, 1990). Baumrind (1991a, 1991b) with a similar conceptualization of parenting examines supportive control, assertive control and directive/conventional control. Authoritative parents are more likely to be warmer, firmer and more democratic than parents using a different parenting style (Steinberg, Dornbusch, & Brown, 1992). Authoritative parenting provides adolescents with responsive and demanding parents (Baumrind, 1989). The authoritative parenting style also contributes to more competent adolescents than other parenting styles (Maccoby & Martin, 1983).

Family Structure

Nearly one-half of all children in the United States will experience the divorce of their parents before the age of 18 (Steinberg, 1996). Following divorce, the majority of

these children will live with their mothers (Furstenburg, 1990). Of those mothers that remarry, approximately one-third to one-half will have a second divorce when their children are adolescents (Steinberg, 1996). Many studies suggest that children from divorced homes are more likely than children from intact homes to have higher levels of drug and alcohol use, more conduct problems and poorer academic performance (Steinberg, 1996). The literature also suggests that adolescents growing up in stepfamilies are at additional risk for problem behaviors than are adolescents in single parent families (Dornbusch et al., 1985).

Peers

Attachment/Relations

During adolescence peers emerge as significant sources of support and new patterns of relationships develop (Blyth and Traeger, 1988). The type of relationship adolescents maintain with their peers is important in understanding the developmental process. Adolescents who have high identification levels with peers report more emotional and informative support from the group, while low identification is correlated with less status. Peers with less identification tend to have lower levels of self-esteem and less effective coping strategies (Seiffge-Krennke and Shulman, 1993). Identification with peers may also have negative effects, as they can be influential in the development of attitudes, motivations and rationalizations that support delinquent behavior (Patterson, Debaryshe & Ramsey, 1989). While attachment to peers has been positively related to psychological well being (Kenny, 1994) it has also been a strong predictor of problem behavior (Noom et al., 1999).

Community

School Climate

Sternberg (1996) reports that school involvement is a critical protective factor against multiple risky behaviors, which are often influenced by perceived care from teachers and high expectations for academic performance. A study conducted by Resnick et al. (1997) reports that the school atmosphere had a small but consistent impact on the emotional well being of adolescents (accounting for 13% to 18% of the variability in emotional distress among older and younger adolescents). Moreover, how connected an adolescent felt toward his or her school was also associated with lower levels of emotional distress and suicidality.

Adolescent Outcome Measures

Adolescent Outcomes

As Furstenberg et al., (1999) point out “tried and true” indicators of successful adolescents include: psychological adjustment, academic competence, self-competence, problem behavior and prosocial involvement. Other research focusing on criteria for successful adolescents, as well as mainstream beliefs by parents and adolescents, are also similar to these indicators (Bornstein, 1995a; Eccles et al. 1997; Furstenberg, 1999).

Psychological Adjustment

Depression

Studies of adolescent depressive disorder suggest a 3 to 4 percent prevalence rate (Angold & Costello, 1995). Further, when investigating depressive symptoms, DuBois et al. (1995) found that 10 percent of the students (fourth-to tenth grade) surveyed had already experienced moderate to severe symptoms of depression in their lives.

Longitudinal research (Block, Gjerde, & Block, 1991) found that male and female adolescents express depression differently. Males are more likely to express sadness by acting-out behavior, and externalizing their depression. Distressed males that are experiencing depressive symptoms are more likely to be aggressive and hostile (Haugaard, 2001). As suicide rates among adolescents have increased 75% over the past decade (Center for Disease Control and Prevention, 1993), assessing depression and depressive symptoms can be seen as especially useful.

Self-esteem is a consequence of quality relationships and productive activity and cannot be influenced through self-affirming activities (Thompson & Rudolph, 2000). In general terms, self-esteem examines how satisfied a person is with him or herself. Similarly, Self-efficacy looks at a person's belief in his or her ability to successfully complete challenges such as schoolwork or other goals. Several studies have indicated that people who have high levels of self-esteem and efficacy perform better in many areas, including schoolwork and career, as well as cope better when difficult and unexpected situations may arise (Bandura, 1996; Eccles et al., 1983; Harter, 1983).

Problem Behavior

Drugs, Alcohol, Sex

Risk taking behavior in adolescence is correlated with decreased economic prospects and less emotional adjustment in adulthood (Elliott, 1993). Although most adolescents only engage in minor acts of delinquency and experimental use of drugs and alcohol, the need to focus on the incidence of risky or problem behaviors exists. Drug use has often been associated with other delinquent behaviors including criminal activity, unsafe sexual activity, and aggressive or violent behavior (Elliot).

Aggression and Violence

Pakiz, Reinherz and Frost, (1992) found a strong correlation between aggression and delinquency in 15-year-old adolescents. Similarly, Farrington (1991) reported early aggression and violent behavior predicted chronic criminal offenses during young adulthood in a sample of males.

Gang Activity

Chander et al., (1998) conducted a national survey of over 21,000 junior high and high school students. In 1989, 15 percent of these students reported the presence of gangs in their schools, in 1995, the presence of gangs in schools increased to 28 percent. Adolescents in gangs are involved in more illegal activities than adolescents who are not affiliated with gangs (Flannery et al., 1999). Gang members are also more likely experience violent death, injury or incarceration (Flannery, Huff, & Manos, 1998).

Academic Performance

Research often assesses adolescent success by academic performance (Schneider and Coleman, 1993; Weston, 1989). Success in school has also been shown to be positively associated with adolescent self-esteem, long-term academic success (Alexander, Dauber, and Entwisle, 1993) and occupational achievement in adulthood (Featherman and Hauser, 1978). However, too often, researchers have investigated academic performance and school placement, and neglected other prosocial activities that adolescents engage in and that contribute to their social competencies, leadership skills and self-esteem. Thus, Activity involvement, with participation in sports, religion, and other extracurricular activities, has also been shown to be a primary indicator of successful adolescent development (Carnegie Corporation, 1992).

The present investigation consisted of participants from different school settings that represent three separate groups: low-risk, at-risk, and delinquent. The delinquent group consisted of adolescents from alternative education continuation high schools. The low-risk and at-risk groups were distinguished from one another in a manner based on the criteria indicated below, in the method section. These measures were also be used to confirm the differentiation of the delinquent group. It is important to note that the formation of these groups was used only as an attempt to insure that data included adequate variance in delinquent behavior. It is expected the ecological domains used will differ for the adolescents and this should contribute to the creation of a conceptual model of differential contextual ecological influences impacting the lives of adolescents respectively. The outcome measures should also contribute to our understanding of the effects of the domains of influence on the lives of adolescents. It is anticipated, for example, that adolescents engaged in more delinquent behaviors will evidence poorer psychological adjustment and lower academic achievement than the low-risk or at-risk adolescents.

METHOD

Participants and Procedures

Archival data from the San Bernardino City Unified School District was utilized. The district consists of traditional high schools and alternative education continuation high schools. This data was collected to gain a greater understanding of adolescent behavior and to assist school counselors in developing more appropriate therapeutic interventions for adolescents. Adolescent volunteers were pre-selected based on behavioral criteria outlined below which were utilized to form three different conditions: low-risk, at-risk and delinquent behavior categories. Adolescents fitting the criteria for these respective groups were then selected randomly until each of the three groups consisted of 120 adolescents. This preliminary categorization of groups provided a stratified random sampling of adolescent behaviors. Adolescents that were identified for a preliminary group were also required to have a parental consent form in their file, which indicated parental approval for the student to participate in research surveys. Of the 360 selected students, 116 were either missing parental consents, not interested in participating in the study, or were absent from school, and therefore excluded from the study. Compensation was not given for participation in the study. All participants were treated in accordance with the "Ethical Principles of Psychologists and Code of Conduct" (American Psychological Association, 1992).

Participants consisted of 244 (148 males, 96 females) adolescents ranging in age from 14 to 19 years old ($M = 16.4$, $SD = 1.1$; 10 (4.1%) 14-year-olds, 50 (20.5%) 15-year-olds, 70 (28.7%) 16-year-olds, 74 (30.3%) 17-year-olds, 38 (15.6%) 18-year-olds, 2 (.8%) 19-year-olds). A total of 106 (43.4%) of the participants indicated that they were

Latino/Hispanic, 60 (24.6%) indicated more than one ethnicity, 43 (17.6%) Caucasian, 27 (11.1%) African American, and 8 (3.3%) Asian American. Adolescent participants completed a 15-page questionnaire packet that included a cover/consent letter, the scales utilized, a brief demographic instrument designed for the adolescents, and a debriefing letter. The order for the presentation of the measures was randomized. Half of the participants completed the demographic assessment before and half after these scales.

Questionnaire packets for adolescents were administered during regular classroom school hours. Adolescent identities were protected, and they were not asked their names. Confidentiality was emphasized in the consent letters, and through verbal clarification to all adolescent participants. All students were informed that their participation was voluntary. Approximately 50 students did not complete questionnaire packets, and were not included in this study.

Group characteristics

Preliminary criteria, made available from the school data, were used to identify three separate groups of adolescents for sampling. The initial criteria for each of the adolescent groups was as follows:

Low-risk

1. Academic competence. Preponderance of grades in the A and B range.
2. Attendance. No trancies.
3. Behavior. No known problem behavior.

At-risk

1. Academic competence. G.P.A. in the C and D range and below; student failed at least one course in the past year.

2. Attendance. Four or more trancies in the past year.
3. Behavior. Problem behavior (other than attendance related) requiring counseling referrals/short-term suspensions.

Delinquent

1. Academic competence. G.P.A in the D and F range; failed two or more courses in the past year.
2. Attendance. Pattern or history of truant behavior, at least prior to alternative education school.
3. Behavior. Expelled from traditional school for violent and/or nonviolent behaviors.
4. Legal problems. Legal actions involving juvenile hall, scheduled court appearances, probation, parole and gang activity.

Measures

Ecological/Environmental Factors

Family Process

Autonomy. Bekker's (1991) 15-item Autonomy scale (adapted by Noom, 1999) was used to measure three aspects of adolescent autonomy. Each of the three subscales, Attitudinal, Emotional and Functional autonomy, consist of five items. Attitudinal autonomy (Chronbach's $\alpha = .90$) pertains to the perceptions of goals by means of desires and opportunities (e.g., "I can make a choice easily"). Emotional autonomy (Chronbach's $\alpha = .85$) pertains to the perceptions of independence through self-confidence and individuality (e.g., "I often change my mind after listening to others"). Functional autonomy (Chronbach's $\alpha = .75$) pertains to the perception of strategies

through self-regulation and self-control (e.g., "I quickly feel at ease in a new situation"). Participants rated each item on a five-point scale ranging from "a very bad description of me" to "a very good description of me". Noom et al. (1999) reported correlations between the three subscales ranging from 0.38 to 0.49, suggesting that the overall concept of autonomy as well as the various aspects of autonomy were assessed.

Attachment. Armsden and Greenberg's, (1987) Inventory of Parent and Peer Attachment was utilized to assess two subscales, attachment to parents (Cronbach's $\alpha = .79$), and attachment to peers (Chronbach's $\alpha = .91$). The concept of attachment was defined as the quality of relationship the adolescent has with his or her parents or peers. This includes both their perception of the availability of communication and trust for the lack of future isolation. Each subscale consists of 12 items (e.g., "My parents/friends understand me"). Participants rated each item on a four-point scale, ranging from "almost never" to "nearly always".

Communication. Barnes and Olson's (1982, 1985) 20-item Parent-Adolescent Communication Scale (PACS) was used to examine both the positive and negative aspects of parent-adolescent communication. Adolescents responded to both subscales (each subscale is 10 items): the first subscale assesses the openness in communication, freedom in communication, as well as comprehension and satisfaction about communication the second subscale examines communication problems, the lack of sharing and the occurrence of negative feelings and selectivity of participants in communication. Adolescents rated each item on a five-point scale ranging from "Strongly disagree" to "Strongly agree."

Parent Characteristics

Parental control. Adapted from Furstenberg et al. (1999), 5 items were used to assess parental control (e.g., “Do you need to have your parents permission to stay out late on a weekday”). The internal consistency obtained for this sample was good (Cronbach’s $\alpha = .75$).

Parenting style. Baumrind’s (1971) 4-item Authoritarian Decision Making Style scale was used to examine parenting style. Adolescents rated each item on a four-point scale ranging from, “My parents tell me just what to do” to “My parents let me decide.”

Family Structure

Demographic variables. Adolescents indicated their age, grade, ethnicity, individuals who live in the home, number of schools they have attended, and their current employment status.

Peers

Peer attachment. As mentioned above, Armsden and Greenberg’s, (1987) Inventory of Parent and Peer Attachment was utilized. The internal consistency obtained for this sample was good (Cronbach’s $\alpha = .91$).

Peer relations/behaviors. Adapted from Furstenberg et al. (1999), 20 items were used to examine peer behaviors (e.g., “How many of the friends you spend the most time with suggested that you do something that was against the law”). Adolescent participants responded to a 5-point Likert-type scale ranging from “All of them” to “None of them.” The internal consistency obtained for this sample was good (Cronbach’s $\alpha = .87$).

Community

School climate. A 14-item scale assessing an adolescent's feelings about his/her school was utilized (e.g., "Do you like school," and "Do you feel safe at school").

Adolescent participants responded to four options ranging from "All of the time" to "Never." The internal consistency obtained for this sample was good (Cronbach's $\alpha = .79$).

School achievement. Jones and Heaven's (1998) six-item school achievement scale was used to assess how much adolescents like school, how well they are doing at school and how likely it is that they will complete high school. The six items were standardized and summed to create a general measure of school achievement (Cronbach's $\alpha = .79$).

Psychological Adjustment/Personal Characteristics

Depressive mood. Kovac's (1999) Child Depression Inventory-Short, 10-item form was used to examine psychological symptoms of internalized distress. Adolescent participants chose between three options (e.g., "I am sad once in a while, I am sad many times, or I am sad all the time"). The internal consistency obtained for this sample was good (Cronbach's $\alpha = .89$).

Self esteem. Rosenberg's (1965) 10-item Self Esteem scale was used to examine participant's reports of their self worth. Participants responded to each of five positively stated (e.g., "I feel that I have a number of good qualities") and five reversed (e.g., "I feel useless at times") items on seven-point Likert-type scales that ranged from (1) Strongly Disagree to (7) Strongly Agree. The internal consistency obtained for this sample was good (Cronbach's $\alpha = .89$).

Self-concept. The Piers-Harris (1969) 80-item Children's Self-Concept Scale was utilized to assess how adolescents feel about themselves. Participants responded to six subscales (behavior, intellectual and school status, physical appearance and attributes, anxiety, popularity, and happiness and satisfaction) using "yes" or "no" answers. A sample item would be, "I am easy to get along with." The internal consistency obtained for this sample was good (Cronbach's $\alpha = .98$).

Self-efficacy. Adapted from Furstenberg et al. (1999), 14 items were used to examine adolescents' feelings of efficacy (e.g., "How well can you get adults to help you when you have personal problems"). Adolescent participants responded to a 4-point Likert-type scale ranging from "Not well at all" to "Very well." The internal consistency obtained for this sample was good (Cronbach's $\alpha = .92$).

Criterion Measures

Problem Behavior

Problem behaviors. A modified version of Decovic et al., (1997) measure of problem behavior was used to assess the frequency and involvement of deviant behavior for the past 12 months. Problem behaviors such as theft, vandalism, drug use and aggressive behavior were rated on a four-point scale, ranging from "never" to "daily or almost daily" (e.g., "Carried a knife or other weapon"). The internal consistency obtained for this sample was good (Cronbach's $\alpha = .97$).

Drug and alcohol use. Jones and Heaven's (1998) drug use scale was used to examine participants' level of drug use for alcohol, tobacco smoking, marijuana, and was modified to assess methamphetamine use. Adolescents endorsed each item on an 8-point

rating scale from “never have used and never will (scored 1) to “I use daily” (scored 8). The internal consistency obtained for this sample was good (Cronbach’s $\alpha = .84$).

Gang activity. Five items were developed to assess gang involvement. The five items measured the adolescent’s gang involvement and the gang involvement of their friends (e.g., “Do you hang out with members of a gang or crew?” and “Do you belong to a gang or crew?”) The internal consistency obtained for this sample was good (Cronbach’s $\alpha = .88$).

Criminal activity. Three items were developed to assess criminal activity. The three items measured the adolescent’s involvement in committing crimes (e.g., “Have you ever committed a crime other than a minor traffic offense?”). The internal consistency obtained for this sample was good (Cronbach’s $\alpha = .88$).

Grades. Assessed utilizing district dataset. Adolescents were also asked, “Which describes the grades that you get in high school” with responses ranging from “mostly A’s” to “mostly F’s.” And, “How do you feel you are doing in high school?” with responses ranging from “doing really well” to “doing poorly.” The internal consistency obtained for this sample was good (Cronbach’s $\alpha = .84$).

School placement. Assessed utilizing district dataset.

RESULTS

Prior to analysis, each of the predictor variables, including the demographics, and the criterion measures were examined through the use of SPSS for accuracy of data entry, missing values, and fit between their distributions and the assumptions of regression analysis. Data were screened to assess normality using histograms, and each scale was tested for skew and kurtosis. Scales assessing drug and alcohol use and frequency were positively skewed, and criterion measures assessing personal characteristics were negatively skewed. Data entry was found to be accurate, and missing data values not provided by participants were excluded. Distributions were found to be within acceptable parameters, and it was not necessary to eliminate any outliers.

Because so many of the variables within the ecological domains were highly correlated, factor analysis was conducted to reduce redundancy, enhance parsimony and alleviate the threat of multicollinearity. Principal axis factor extraction with oblique rotation (oblimin) was performed on predictor variables related to the ecological domains of Family Process, Peers, Community (school climate), Personal Characteristics, as well as the criterion variables related to Delinquency. Cases were excluded pairwise. Correlations among ecological domain and behavioral outcome variables are reported in Table 2. Five factors were extracted. All factors were internally consistent and well defined by the variables. Loading of variables on factors and rotated eigenvalues are shown in Table 3. Attachment to Peers was not included in the factor analysis because of problems of multicollinearity, but Attachment to Peers was included as a predictor variable in the regression analyses.

Table 2

Pearson Correlations Measures

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1. Grades	1															
2. Attachment to Parents	.64**	1														
3. Attachment to Peers	.39**	.49**	1													
4. Gang Involvement	-.59**	-.65**	-.19**	1												
5. Parent Knowledge of Act	.71**	.83**	.52**	-.65**	1											
6. Problem Behavior	-.64**	-.62**	-.26**	.74**	-.73**	1										
7. Drug Use	-.56**	-.57**	-.10	.54**	-.61**	.66**	1									
8. Freq of Drug/Alcohol Use	-.52**	-.51**	-.06	.57**	-.56**	.61**	.87**	1								
9. Criminal Activity	-.60**	-.54**	-.06	.65**	-.55**	.66**	.67**	.64**	1							
10. Family Activities	.76**	.73**	.46**	-.60**	.77**	-.71**	-.62**	-.62**	-.63**	1						
11. Depression	.29**	.37**	.67**	-.16*	.44**	-.26**	-.08	-.06	-.06	.38**	1					
12. Self-Efficacy	-.66**	-.78**	-.63**	.54**	-.81**	.63**	.49**	.45**	.43**	-.70**	-.54**	1				
13. Self-Esteem	-.56**	-.69**	-.71**	.42**	-.70**	.47**	.31**	.28**	.32**	-.63**	-.61**	.78**	1			
14. Self-Concept	.69**	.85**	.67**	-.55**	.85**	-.61**	-.51**	-.50**	-.44**	.75**	.59**	-.90**	-.86**	11		
15. School Environment	.74**	.63**	.38**	-.52**	.66**	-.59**	-.58**	-.52**	-.54**	.70**	.28**	-.58**	-.53**	.60**	1	
16. Peer Delinquency	-.68**	-.78**	-.48**	.69**	-.81**	.79**	.57**	.51**	.55**	-.71**	-.29**	.71**	.65**	-.67**	-.61**	1

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

Table 3

Pattern Matrix / Factor Loadings

	Factor				
	1	2	3	4	5
School Environment	.95	-.02	.01	.01	.04
Attachment to Parents	.73	.16	.05	-.08	-.04
Parents' Knowledge of Daily Activities	.40	.31	.09	-.14	-.20
Depression	-.06	.77	-.05	-.05	-.01
Self-Esteem	-.14	-.72	-.12	-.09	-.03
Self-Concept	.26	.65	.12	-.21	-.04
Self-Efficacy	-.22	-.59	-.06	.13	.11
Grades in School	-.06	-.02	.94	.02	-.08
How Well in School	.03	.09	.81	-.01	.06
Involvement in Family Activities	.09	.23	.35	-.21	-.91
Freq of Drug & Alcohol Use	.04	.04	.07	.95	.01
Use of Drugs & Alcohol	-.03	.02	-.06	.91	.08
Problem Behavior	.05	-.15	.02	.08	.85
Gang Activity	-.21	.07	-.09	-.03	.67
Criminal Activity	-.06	.18	-.22	.24	.45
Rotated eigenvalues	6.7	4.9	6.9	5.8	6.4

Based upon the variable that defined them, the five factors extracted were conceptually defined as, "Personal Characteristics," "School and Parental Involvement," "Drug and Alcohol Use," "School Performance," and "Gang and Criminal Activity."

The first factor, School and Parental Involvement, included adolescents' reports of teachers and the school environment, attachment to parents and parental knowledge of daily activities. The second factor, Personal Characteristics, included self-esteem, self-efficacy, depression and self-concept scales. The third factor, Drug and Alcohol Use, included scales assessing drug and alcohol use and frequency. Factor four, Gang and Criminal Activity, included problem behavior, gang activity and criminal activity scales. Factor five, School Performance, included academic grades, and the students' reports of how well they were doing in school.

Pearson correlations for the three predictor variables (Personal Characteristics, Attachment to Peers and School/Parental Involvement) and the criterion variables utilized (Drug and Alcohol Use, Gang and Criminal Activity, and School Performance) are indicated in Table 4. Three two-step hierarchical multiple regression analyses were carried out to examine the relationship among the three predictors and the three criterion variables. In each of the three analyses, the variable Personal Characteristics was entered in using standard entry on the first block, and the subsequent predictors (Attachment to Peers, and School/ Parental Involvement) were also entered standard entry, on step two.

For the analysis of Drug and Alcohol Use, the amount of variance accounted for by Personal Characteristics was significant in Model 1 ($R^2 = .11$, adjusted $R^2 = .10$, $F(1, 146) = 18.02$, $p < .001$). The amount of additional variance accounted for on Step 2 also was significant, ($\Delta R^2 = .20$, total $R^2 = .31$, $F(2, 144) = 21.08$, $p < .001$). Though

significant in model 1 (Std. Beta = -.33), Personal Characteristics was no longer an important predictor variable in model 2 (Std. Beta = -0.13). In model 2, School/Parental Involvement became a primary predictor (Std. Beta = -0.56), with Attachment to Peers serving as a significant secondary predictor (Std. Beta = .24). See Table 5.

For the analysis of Gang and Criminal Activity, the amount of variance accounted for by Personal Characteristics was significant in Model 1 ($R^2 = .20$, adjusted $R^2 = .19$, $F(1, 146) = 36.01$, $p < .001$). The amount of additional variance accounted for on Step 2 also was significant, ($\Delta R^2 = .28$, total $R^2 = .49$, $F(2, 144) = 38.65$, $p < .001$). Though significant in model 1 (Std. Beta = -.44), Personal Characteristics was no longer an important predictor variable in model 2 (Std. Beta = -0.12). In model 2, School/Parental Involvement became a primary predictor (Std. Beta = -.68), with Attachment to Peers serving as a significant secondary predictor (Std. Beta = .15). See Table 6.

For the analysis of School Performance, the amount of variance accounted for Personal Characteristics was significant in Model 1 ($R^2 = .25$, adjusted $R^2 = .25$, $F(1, 146) = 50.79$, $p < .001$). The amount of additional variance accounted for on Step 2 was also significant, ($\Delta R^2 = .21$, total $R^2 = .46$, $F(2, 144) = 27.66$, $p < .001$). Though significant in model 1 (Std. Beta = 0.51) Personal Characteristics was no longer an important predictor variable in model 2 (Std. Beta = 0.16). In model 2, School Parental Involvement became a primary predictor (Std. Beta = 0.57), with Personal Characteristics as a secondary predictor (Std. Beta = 0.16). See Table 7.

The results of the three separate regression analyses present a relatively consistent view of the predictors examined and their relationship to the measures of Drug and Alcohol Use, Gang and Criminal Activity, and School Performance. In all three

analyses, Personal Characteristics accounted for a significant amount of the variance when entered alone. Thus, an adolescent's reports of his/her depression, self-esteem, self-concepts and self-efficacy contribute to the criterion measures examined.

Attachment to peers was found to be a significant but minor predictor in two of the regression analyses, Drug and Alcohol Use, and Gang and Criminal Activity.

School/Parental Involvement was a significant and large effect predictor variable in all three analyses. Relatively speaking, the results indicate that, when considered together, School/Parental Involvement was clearly the single most important predictor variable for behavioral outcomes.

Table 4

Pearson Correlations for Factors

Measures	1	2	3	4	5	6
1. Attach to Peers	-					
2. School/ Parental Involvement	.50**	-				
3. Personal Character	.59**	.61**	-			
4. School Performance	.38**	.67**	.51**	-		
5. Drug & Alcohol	-.12	-.53**	-.33**	-.69**	-	
6. Gang	-.26**	-.68**	-.45**	-.78**	.79**	-

* $p < .05$. ** $p < .01$. *** $p < .001$.

Table 5

Hierarchical Regression Analysis Results: Drug and Alcohol Use

Model	Adolescent ratings		
	Beta	R ²	ΔR^2
1. Personal Characteristics	-.33***	.11	
2. Personal Characteristics	-.13	.31***	.20***
Attachment to Peers	.24**		
School/Parental Involvement	-.56***		

* $p < .05$. ** $p < .01$. *** $p < .001$.

Table 6

Hierarchical Regression Analysis Results: Gang and Criminal Activity

Model	Adolescent ratings		
	Beta	R ²	ΔR ²
1. Personal Characteristics	-.45***	.20	
2. Personal Characteristics	-.12	.48***	.28***
Attachment to Peers	.15*		
School/Parental Involvement	-.68***		

* $p < .05$. ** $p < .01$. *** $p < .001$.

Table 7

Hierarchical Regression Analysis Results: School Performance

Model	Adolescent ratings		
	Beta	R ²	ΔR ²
1. Personal Characteristics	-.51***	.11	
2. Personal Characteristics	-.16*	.26	.21***
Attachment to Peers	.003		
School/Parental Involvement	-.57***		

* $p < .05$. ** $p < .01$. *** $p < .001$.

DISCUSSION

The present investigation demonstrates the importance of using a contextual model that endeavors to understand why some adolescents engage in risky or delinquent behaviors while others do not. The model described for the approach of the present investigation, was based on the salient ecological domains of an adolescent's life, it also provided for a more valid and inclusive understanding of adolescent behavior than previous research, which was limited by its focus on single variable explanations. The ecological domains (Family Process, Parent Characteristics, Family Structure, Peers, Community/School Climate) contributed to the creation of a conceptual model of influences impacting the lives of the participants in the present investigation. The outcome measures also contributed to the understanding of the effects of the domains of influence on the lives of adolescents.

In all three regression analyses (Drug and Alcohol Use, Gang and Criminal Activity and School Performance) Personal Characteristics accounted for a significant amount of the variance when entered alone on Step 1. Adolescents with high levels of these Personal Characteristics were found to have higher levels of Drug and Alcohol Use, more involvement with Gang and Criminal Activity, and poorer School Performance.

In general, the results of the three separate regression analyses present a relatively consistent view of the predictors examined (School/Parental Involvement and Attachment to Peers) and their relationship to the outcome measures (Drug and Alcohol Use, Gang and Criminal Activity, and School Performance). Importantly, having accounted for the impact of the Personal Characteristics in Model 1 for each of these analyses then permitted examination of the role of the environmental, ecological, variables in the

prediction of the criterion measures. The results of the present investigation were consistent with the hypothesis that proximal ecological influences would be significantly related to adolescent behavior. The findings indicate a particular importance of School and Parental Involvement as it consistently predicted the largest amount of variance for each of the adolescent behavioral outcomes.

School and Parental Involvement included scales assessing attachment to parents and parental knowledge of daily activities, as well as adolescents' reports of teachers and their perception of the school environment. This variable was a significant predictor in the regression analysis, Drug and Alcohol Use. Adolescents reporting higher levels of attachment to their parents, parents' knowledge of their daily activities and adolescents' positive perception of the school environment were less likely to engage in Drug and Alcohol Use than those participants with low levels of School/Parental Involvement. School/Parental Involvement was also a significant predictor in the regression analysis, Gang and Criminal Activity. Adolescents reporting higher levels of attachment to their parents, parents' knowledge of their daily activities and adolescents' positive perception of the school environment were also less likely to be involved in Gang and Criminal Activities than were those adolescents indicating lower levels of School/Parental Involvement. School/Parental Involvement was also a significant predictor in the regression analysis, School Performance. Adolescents reporting higher levels of attachment to their parents, parents' knowledge of their daily activities and adolescents' positive perception of the school environment were more likely to have success in School Performance, and earn higher grades, than were adolescents indicating lower levels of School/Parental Involvement.

Attachment to Peers was also found to be a significant predictor of behavior outcomes for participants. Although Attachment to Peers accounted for less of the variance than the School/Parental Involvement variable, it was predictive in two of the three regression analyses. In the first regression analysis, Drug and Alcohol Use, Peer Attachment was found to be predictive. Adolescents indicating they had poor Attachment to Peers were more likely to use drugs and alcohol, and use them more frequently, than adolescents with high levels of Attachment to Peers. Adolescent's reports of their Attachment to Peers was also a significant predictor in the regression analysis for Gang and Criminal Activity. In this case, adolescents reporting higher levels of Attachment to their Peers were less likely to be involved in Gang and Criminal Activity than those adolescents reporting lower levels of attachment to their peers. In the third regression analysis, Attachment to Peers was not found to be a significant predictor of School Performance.

While intervention programs focusing on single variable explanations have not produced significant changes in the lives of adolescents (Lerner, 1996), this ecologically-based developmental context of understanding the adolescent may provide more effective interventions and prevention strategies. This may be particularly relevant for the variable School/Parental Involvement, which was a significant predictor in each of the behavioral outcomes measured. This data suggests the ongoing need for parents to remain involved and committed to parenting their adolescent. A "goodness of fit" (Lerner) between the individual characteristics of the adolescent and the attachment to his/her parents was predictive of adolescent outcome. Despite literature suggesting parental influences are less important and meaningful to the adolescent than their peers (Harris, 1998) the

present study demonstrates the importance of parental involvement and attachment to parents.

Adolescents engaging in more prosocial activities and fewer delinquent behaviors also reported engaging in more family activities each week than adolescents engaging in at-risk or delinquent behaviors. These results also support the positive effect for families engaging in frequent family activities, which in turn increases adolescent involvement and interaction with family members. Importantly, parents should not misinterpret the developmental need for their adolescent to become autonomous with no longer needing parental involvement. The data indicates adolescents benefit from parents that remain present in their lives, and adolescents need their parents to stay involved for a positive outcome. This is suggestive for an important area of future research that would consider the influence of increased involvement in family activities and family interaction for families with adolescents engaging in at-risk or delinquent behaviors. Future research focusing on increased parental involvement and family activities, which foster attachment, may offer useful parenting and family therapy practices and interventions. Parental involvement and attachment are also important variables to consider in determining how an adolescent develops self-concept, self-esteem, and other personal characteristics.

The present study avoided the methodological limitations of the Furstenberg et al. (1999) investigation. As previously mentioned, participants in the Furstenberg et al study reported engaging in very few, if any, delinquent activities. The authors then assigned participants into quartiles, and concluded at-risk or delinquent behavioral outcomes could be understood through the cumulative risk model of Rutter (1979). In the current study,

adolescent participants were older, and endorsed items indicating involvement in numerous delinquent behaviors. This representative sample provides a more accurate and thorough understanding of adolescent behavior. The data from the present study further suggests proximal influences of parental involvement and attachment to parents are more salient domains than the distal influence of peers.

Modification of the cumulative risk model, which would integrate the ecological domains, would provide a more detailed understanding adolescent behavior than using either of these models alone. The integration of these two models would require assigning more value or weight to those variables that are more proximal than the distal variables, but would still incorporate the important theoretical implications of Rutter's (1979) cumulative risk model. This approach would provide a more meaningful and useful way to understand adolescent behavior. This integration would also contribute to a greater understanding of how proximal and distal influences impact the adolescent.

Important limitations to consider for the current findings include the use of skewed data. Although type and degree of delinquency was assessed from a variety of measures, a large portion of the sample of students endorsed using drugs and or alcohol. Additionally, although there is no reason to believe the participants in this study were not accurate in their endorsement or non-endorsement of behaviors, future research should include collaborative reports from parents, teachers and peers to confirm behavioral outcomes, which would avoid the methodological limitations of self-reports alone.

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